POST-WAR PROBLEMS AND PROGRAMS FOR OHIO AGRICULTURE

By
A Committee of Post-War Problems and
Programs for Ohio Agriculture

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INTRODUCTION

During the winter of 1943-1944 the Ohio Agricultural Experiment Station and the College of Agriculture of the Ohio State University were asked by the Bureau of Agricultural Economics of the United States Department of Agriculture to prepare a statement dealing with Post-War Problems and Programs for Ohio Agriculture.

A State Committee on Post-War Problems and Programs for Ohio Agriculture was called together to sponsor and carry forward the study. The membership of the committee consists of representatives of the following organizations:

Ohio Agricultural Experiment Station
College of Agriculture, O.S.U.
Soil Conservation Service
State and Federal Forestry Service
Farm Security Administration
Agricultural Adjustment Agency
Rural Electrification Administration
Ohio Nutrition Committee

Over 40 members of the staff of the above organizations took part in preparing the report. J. I. Falconer, Department of Rural Economics and Rural Sociology, Ohio State University and Ohio Agricultural Experiment Station, served as chairman.

I. DYNAMICS AND POTENTIALITIES OF THE SITUATION AT THE END OF THE WAR

This report deals with some of the post-war adjustment problems which will confront the nation during the immediate demobilization period following the cessation of hostilities in Europe. More particularly it deals with problems and programs that may have a bearing upon the development of Ohio agriculture during the first year or two following the end of the war in Europe. It should be apparent that the background for this period is not now clear cut since the situation at that time will depend upon how much longer the war lasts; upon the extent of the shift in manpower; upon the degree to which the productivity of our national resources have been impaired; upon our future foreign trade policy; upon the facility with which we can shift back to full civilian employment; and many other items regarding which we can now only speculate.

In developing the report the following premises have been made: (1) That a major problem following the war will be to maintain as nearly as possible full employment. At the present time one-half our productive energy has been directed from normal peace time activities to fighting the war. Much will depend upon the facility with which the shift can be made back to civilian activities. Certainly agriculture is vitally concerned with the degree of success with which this can be done in industry since it is upon the income of the 80 per cent of our population which is non-farm that the income of the farmer will largely depend. (2) That agriculture has a responsibility along with industry and trade in bringing about full employment. (3) That it is essential that we not only have full employment, but that those employed be employed in productive work in a productive manner. The experience of the war has demonstrated the tremendous productive capacity of the country when we have full employment and full utilization of our resources. It is to be hoped that this object lesson will not soon

be forgotten. There will be a desire following the war to maintain as nearly as possible the high level of income experienced during the war. To anywhere near attain these goals and at the same time pay for the war would necessitate the adoption of more efficient methods and practices than have prevailed in the past. This is true in agriculture as well as in industry. (4) That the large production in agriculture during the war period has in part been attained through the depleting of resources, both human as well as physical, that a major objective during the post-war period should be to restore and improve these resources insofar as possible. (5) That with the end of the war there will be a large amount of surplus military supplies and equipment. That many of these could well be used in agriculture to the end that the productivity of our resources and the facilities for farm living may be improved.

In developing the report it has been assumed that unemployment will not necessarily be a major problem during the adjustment period. The aim has been rather to point out some of the lines of development which might be forwarded during the period to the end that we may continue to produce at somewhere near capacity and to maintain a satisfactory level of living.

The committee made no attempt to cover all aspects of the subject in this report, which was prepared in a limited allotment of time. The aim was rather to set forth some suggestions which it felt would be helpful in the post-war period.

II. DEVELOPMENT AND CONSERVATION OF SOIL RESOURCES

The prime physical resources of Ohio agriculture are soil and water. The trend in the natural productivity of the average Ohio soil has always been downward; yields of crops have been sustained and even increased only by the interjection of numerous new techniques and more efficient germplasm of the plants grown on that soil. These new techniques and superior plant strains would have given even greater increases had the average productivity of the soil not declined at the same time.

Stop Soil Deterioration

Not over a prolonged period can a satisfactory yield level and a permanent agriculture be maintained by opposing techniques and germplasm against declining soil productivity.

In the 1930's a slight slowing up of the rate of deterioration was attained, but during the war that rate has again been accelerated, primarily as a result of the striking reductions taking place in the sod-crop acreages and the rapid increases in the acreages of soybeans.

In 1935 Ohio agronomists developed a system of productivity balances, by which there is expressed the percentage change in the productive capacity of the soil occurring annually under a specific cropping system and management. Calculated for the rotated crop land of the entire State these productive balances tell the story:

In 1929 - the balance = minus .65%

In 1935 - the balance = minus .61%

In 1939 - the balance = minus .51%

In 1942 - the balance = minus .61%

In 1943 - the balance = minus .67%

In 1944 - the balance may be as low as minus .75%

Ohio soils have truly gone to war! In a few areas some may be irreparably damaged, but intelligent post-war programs can yet reconstruct most of them for some economic uses.

Hence, a primary objective of post-war programs for agriculture in Ohio should be directed toward attaining a positive balance in soil productivity. To do this, programs of conservation and crop adjustment should stimulate and make profitable the general adoption of practices that will result in building up soils.

More Sod Crops

To attain a positive soil productivity balance there shall have to be greatly increased proportions of land in sod crops and far wider use of the higher types of sod-forming and soil-building legumes and legume-grass combinations. Public and private recognition must be given to the values that sod crops have in controlling erosion and in building up soil productivity (through additions of active organic matter) as well as to their functions in providing forage for pasture, silage, and hay.

Measuring Post-War Adjustments

On the basis of a successful pre-war demonstration in Licking County, Ohio, we suggest that productivity balances and changes wrought in productivity be made the basis for conservation or adjustment payments to farmers.

Post-War Procedures for Soil Conservation

The following appear now to be basic considerations and needs in attacking the problem of soil deterioration in the immediate post-war period:

1. Completion of the Inventory of the Soil Resources of Ohio.
2. An Accelerated Program of Liming Ohio Soils.
3. Wider and More Regular use of Fertilizers.
4. Control of the Water Resource and PROTECTION AGAINST EROSION.

5. Planned Production of Forage Crop Seed.

6. Cooperative Weed Control.

7. Training of Technicians.

1. COMPLETION OF THE INVENTORY OF THE SOIL RESOURCES OF OHIO

A complete inventory of the soil resources of the state is a first essential in any general program for the improvement of the Agriculture, for planned land use, and for soil conservation and improvement. Detailed soil surveys by counties are being made by the Ohio Agricultural Experiment Station in cooperation with the federal Bureau of Plant Industry and the Soil Conservation Service.

With the establishment of Soil Conservation Districts, there has been an increased demand for information of the physical land resources as a basis for planning for soil and crop management on individual farms. Such surveys are now being made with very limited personnel in 9 Soil Conservation Districts. Of 14 districts now in the process of organization, detailed surveys are available for only four. Although general information on soils is available for the whole state, detailed surveys should be available for 58 of the counties not yet adequately surveyed.

Two men, working two years, are required for each county. A total of 232 technical man years are involved.

2. AN ACCELERATED PROGRAM OF LIMING OHIO SOILS.

It is estimated that Ohio farmers could use 4,500,000 tons of agricultural lime annually in the immediate post-war period. Present use is about 1,500,000 tons, but would be greater if more could be delivered and spread on the fields.

To treble the present use of lime involves the following considerations:

A. Increased Production at the Quarry.

In war years much of the machinery has become seriously worn. Extensive repairs and in some cases replacements may be necessary. Additional grinding

facilities should be provided even ahead of demobilization so as to prepare to start the enlarged program. Additional driers at the quarry would facilitate all season movement of ground limestone.

Agricultural limestone is largely a by-product from screened, sized crushed limestone for road building, aggregate, etc. If the demand exceeded the supply from this source, the price of agricultural limestone would need to be increased an extra $.20-$.30 a ton to put it on a strictly agricultural basis.

In areas where limestone strata outcrop portable crushing outfits are one means of increasing the quantities locally available.

B. Provision for stock piles in covered storage at key points.

The size and location of stock piles will depend on the requirements of the district, the economical distance for hauling by truck, and the location of railroads. Storage must be equipped for mechanical handling of the product, both for unloading from railroad cars, and for reloading into trucks. All handling must be easy; that is with a minimum of hand labor. Gravity hoppers should be constructed at once so as to be available. Mechanical elevators will also be required.

C. Transportation.

Assuming that adequate trucks will be released by the Army in the early stages of demobilization, they could be used to move the increased amounts of lime. Present trucks cannot do it.

D. Spreading machinery must be available.

Construction of spreaders should be a priority item, so as to be prepared to go after demobilization. Spreaders of the type attached to or integral with the delivery truck will be largely used. More efficient use of them can be made with the provision of stock piles and shorter hauls. Probably 1000-1500 truck spreaders can be effectively used to move the increased lime.

E. An adequate, simple credit program must be provided.

The returns from lime can be forecast on an actuarial basis, its use increases land values. Simple credit systems are advisable thru public and private channels.

F. Owner-tenant relationships in liming programs must be clarified.

The owner may regard the application of lime as an addition to capital investment, the tenant as a guarantee of increased production.

G. An intensive educational program is essential.

This should present clearly and simply the benefits to be anticipated from an adequate liming program. It should explain how a farmer can find out what his liming needs are, and how he can carry out the program that may be suggested to him.

All agencies should cooperate in one well coordinated program. These agencies should include the Ohio Agricultural Experiment Station, the Ohio State University, the Agricultural Extension Service, the Soil Conservation Service, the Agricultural Adjustment Administration, and the Agricultural Limestone Industry.

These agencies should cooperate and check to avoid confusing or apparently contradictory statements. Emphasis should be put on simplicity and on essentials.

The program should be carried out through publications and meetings. Bulletins, circulars, press releases, and spot radio announcements might be employed. Small group meetings are to be preferred, and should be held in the agricultural communities to be served. Field observation of results of adequate liming programs would be desirable where feasible.

In conclusion: the whole lime program to be effective must move easily and fast; must take advantage of high farm prices and income that will likely continue for two to four years after the cessation of hostilities in Europe. The farmer will have money to buy lime, and the intensive, soil depleting agricultural system he has been using, and will continue to use as long as prices remain

high, will make the application of lime doubly important to our longtime agricultural outlook.

3. WIDER AND MORE REGULAR USE OF FERTILIZERS

At present Ohio uses one-third of all the mixed fertilizer used in the 12 north central states (the Corn Belt). It has been estimated that in Ohio fertilizer is directly responsible for 18-20% of the total food production of the state. The benefits of the liming program will not be effectively utilized unless accompanied by a parallel fertilizer program.

It has been estimated that roughly doubling the N, P_2O_5, and K_2O used in 1941 would increase Ohio crop yields by another 10%. This means increasing applications on corn from 110,000 tons to 225,000 tons, and on hay and cropland pasture from 175,000 tons to 237,000 tons, etc.

Immediately following the war, and while prices for farm products are still high, farmers should use the maximum fertilizer possible. The result will be increased yields, greater profits, and less depletion of soils. What will be used will depend on price and availability of fertilizers, and on how well the farmer is sold the idea of using more plant food in this form.

If the increased use of fertilizer is to be accomplished, the following items must be provided for:

A. Sufficient labor available to the fertilizer manufacturers.

B. Storage capacity to permit plants to operate during a longer season. Dealers may provide part of this extra storage, but the simplest solution would be to persuade the farmer to buy early and provide suitable storage on his farm.

C. Adequate supplies of raw materials.

The situation so far as N is concerned seems satisfactory. Superphosphate production may be limited by a shortage of sulphuric acid, if other industrial demands for this acid are very large. Potash may be adequate, but if short might be supplemented by imports from Spain or France.

D. An educational program is essential.

It should parallel the outline given for lime. In fact it should be a combined program, since continuing returns from either lime or fertilizer depend on proper applications of the other.

In addition to results to be obtained on cropland, there are 3,500,000 acres of permanent pasture in Ohio which could be given fertilizer treatments with profit.

4. CONTROL OF THE WATER RESOURCE AND PROTECTION AGAINST EROSION.

A. The Situation.

Better control of soil and water movement will make much of Ohio's farm land more productive. These items are treated together because retention of water on sloping land and soil erosion control are accomplished by the same measures.

By the end of the war the principal conditions which will influence control of soil and water movement on Ohio crop lands will probably be:

1. Supplies of organic material in all Ohio soils will be greatly depleted,
2. Erosion damaged areas of the state will have been enlarged,
3. Inadequate supplies of soil water will be more generally recognized as a factor limiting crop yields just as inadequate supplies of underground water limit industrial activity.

In the undulating to steep areas where surface run-off is the problem, the acreage susceptible to serious erosion damage, as well as the acreage actually damaged, will have been materially increased.

The majority of the farmers will have recognized the need for erosion control practices but only a small minority will know what to do. Recognition of the need for erosion control practices will have resulted in the formation of soil conservation districts in most of the areas in which erosion control is a critical problem.

In the almost flat and flat drainage areas of the state, many tile systems, which were once adequate, will have become inadequate because water moves through the soil more slowly when the organic matter content is reduced.

In northwestern Ohio many large public ditches will need rehabilitation.

B. Objectives.

The principal objectives of controlled soil and water movement are:

1. A land use pattern which recognizes the varied capabilities of Ohio soils. At the present time, crops are being grown on large areas which are best adapted to the production of permanent vegetation (grass or trees), and some areas which are capable of producing cultivated crops are now included in pastures or woodlands.
2. The application of water retention and erosion control practices on all lands on which they are essential to the conservation and development of these physical resources.
3. The construction of new tile drainage systems or expansion of existing systems on individual farms to provide adequate drainage for all areas on which crop production is now limited by excess water storage in the soil or on the surface.
4. The revamping of the prevailing systems for discharging water from private systems of surface and tile drainage into public drainage ditches.
5. The reconstruction of many major public drainage systems to restore them to their former effectiveness and to make their maintenance more feasible than it has been with the designs which were used when the ditches were constructed.
6. The construction of adequately-designed surface storage reservoirs for water for livestock use, spraying, irrigation, recreation, or fish production. Ohio is dotted with the remains of ponds which

functioned for only short periods, hence the reference to "design". Livestock water has been the principal objective of most Ohio farm ponds in the past. Water for spraying and irrigation of truck crops, orchards, small fruits, and potatoes is becoming increasingly important to Ohio agriculture.

Major Problems.

All of the objectives listed above present the primary problem of informing land owners and tenants regarding desirable practices.

The suggested changes, in many instances, will pay for themselves within a relatively short period, but some of the changes introduce critical financial problems. Shifting land from crop or grass production to tree production postpones returns so long that some financial assistance or inducements will be required when such changes are necessary on large portions of a farm.*

Existing state drainage laws make inadequate provision for the maintenance of public drainage enterprises. Revision of these laws seems to be necessary to expedite their reconstruction. Also, some revision of the Ohio Soil Conservation District law or of Federal policies will be needed if the Federal government is to participate in postwar projects in Ohio to the extent that such participation is possible in most states.

C. Measures Needed to reach objectives.

1. Since information is the principal deterrent, provision for an expanded corps of technically-trained men to work with farmers is paramount.
2. State legislation which will make maintenance of public drainage systems feasible.
3. More machinery for the excavation of drainage ditches will be needed if publicly-paid labor becomes available in the post-war years. More

*Investments in tile systems or assessments for public drainage enterprises frequently are too large to be paid out of current income.

earth moving equipment must be made available for farm pond construction. Such equipment may come from private contractors or from surplus war materials.

4. The capacity of tile manufacturing plants may have to be expanded, if farm incomes are maintained in post-war years, so farmers can buy tile or if some other method of financing these capital investments is provided.

5. PLANNED PRODUCTION OF FORAGE CROP SEEDS.

In order to have adequate quantities of seeds of forage crops for restoring and expanding the acreages of sod and soil improving legumes and grasses, immediate programs, probably subsidized with public funds, are required to accumulate supplies of foundation stocks of the superior strains of forage crops. Then these strains must be rapidly and deliberately increased under situations where seed product on becomes the prime objective rather than the "tail-end" of forage crop production.

6. COOPERATIVE WEED CONTROL.

The weed menace is increasing, and in many instances can be controlled only through cooperative community programs. Man power and equipment released during or following demobilization can be effectively utilized in publicly financed community programs for control of serious weeds. Surplus tractors and scrapers can be used in these programs.

7. TRAINING TECHNICIANS.

With the development of various agricultural programs, the need for highly trained technicians in carrying out the different lines of work is evident. The expansion of the Soil Conservation District program will require Conservationists for assistance in land use planning and soil surveyors in making the physical land inventory. The deliberate production of seed crops will require technically trained men in the production and processing of the crop. The

increased use of lime and fertilizer will require technically trained personnel in the production, sale, and servicing of these products.

These and other similar needs point to the desirability of specialized and immediate college training for a considerable group of men being released from the army or from industry.

III. DEVELOPMENT AND CONSERVATION OF NATURAL RESOURCES - FOREST LAND

(See appendix A for the detailed report)

Ohio's forest lands now total about 3.7 million acres or 14 per cent of the original forested area. The remaining forest sustains a very low volume of usable material as contrasted with the high quality of the virgin timber. Whereas most of the remaining merchantable timber is in the farm wood lots of the level counties, the greatest area of potential wood land is on the easily eroded hill lands of eastern and southern Ohio. In addition to the 3.7 million acres now classed as forest, the hill section contains extensive areas where whole farms or parts of farms have been abandoned to revert to forest by the slow processes of nature. Such land is estimated to total about 1.5 million acres and is in various stages and conditions of reversion to forest. Some stands are of vigorous second growth poles and other locations have been so severely eroded as to require a long cycle of revegetation before a vigorous forest growth can be established.

Current Importance of Ohio's Forests

Ohio's timber production in 1942 was estimated to be 270 million board feet or roughly 15 per cent of the 2 billion board feet used annually within the State. Total annual growth is estimated to be 217 million board feet or 53 million board feet less than the estimated annual harvest. Good management practices could double the present annual growth on the existing forest area of 3.7 million acres and the annual timber deficit could be further reduced by bringing the 1.5 million acres of abandoned and idle land into timber production. This is the over-all objective so far as Ohio forestry is concerned.

A point of prime importance is the fact that at least 95 per cent of Ohio's timber is growing on privately owned lands: Approximately 65 per cent is in farm

wood lots, 12 per cent is owned by mining companies, 18 per cent is in holdings of miscellaneous types of owners. Of the forest in private ownership only about one-third is managed with any regard for future production. Only about 10 per cent of the wooded area is now in high production, another 18 per cent can yield reasonably good returns now and a total of 72 per cent is estimated as being potentially capable of yielding reasonably good returns in the future. Proper management of the 28 per cent (18 + 10) of the forests which now contain the bulk of the timber now of merchantable size is of prime importance to the industries now dependent on Ohio timber.

The forest management problems can be summarized as follows: (1) protect the stands from fire and from grazing by livestock; (2) prevent over-cutting of existing stands; (3) reforest idle and abandoned land; (4) remove cull trees from existing forests.

Some other problems are associated with forest management. (1) water shed protection in order to replenish the diminishing ground water supply needed by both industry and agriculture; (2) forest recreation which particularily applies to the publicly owned forests which at present can only partially supply this service to Ohio's population; and (3) enlarging the employment opportunities of the population in areas dependent on a mixed farm-forest economy.

Direction of Needed Action

An action program for Ohio can be stated in seven categories:

1. Accomplish the reforestation of the idle and abandoned land not adapted to a higher use.
2. As a part of No.1, expand the publicly owned forests by purchasing a minimum of 40,000 acres per year.
3. Maintain an adequate forest fire control organization in all regions where fire is a hazard.
4. Make trained foresters available to assist private timber owners in management, utilization and marketing problems.
5. Intensify forest research.
6. Evaluate forest land as an investment for public and private funds.
7. Investigate legislative needs to effect full productivity of forest lands.

A few of the guiding principles which apply to the above stated seven points are: (1) where a large percentage of the land in a region is abandoned a state forest purchase area may be established.

(2) where the land to be reforested is not massed in units suitable for public forest purchase areas, the reforestation is to be carried on through the cooperation of land owners. A limited amount of subsidy with adequate safeguards of the public interest might be employed to encourage reforestation but the main emphasis probably should be on education.

Capital Improvements

1. Protection Against Fire

   a. Hazard reduction. See discussion, Appendix A.

   b. Improvements. At present 1,300,000 acres are served by steel towers and 2,700,000 acres are patrolled by planes. It is assumed that towers will replace planes when possible to do so. Fifty towers will be needed; also 150 miles of telephone line to connect towers to commercial lines.

   c. Fire equipment. Sixty tractors with plow attached and with trailer to transport each unit will be needed. If a machine, similar to a jeep, equipped with a 100 gallon tank and high pressure pump were available, fifty such units could also be used to advantage.

2. Timber Development and Water Shed Protection

   a. Planting. Planting work on public land should reforest 250,000 acres (assuming an active land purchase program can be carried on).

   About 400,000 acres of privately owned lands should be planted provided either that the public investment is adequately safeguarded or the expense is borne by the owners of the land.

b. Stand Improvement. This should be limited to an average of two man-days per acre. On publicly owned lands this could total 1,000,000 man-days in the next ten years. One million acres of privately owned lands could benefit by a similar amount of stand improvement work and would provide 2,000,000 man-days of work. This would require trained supervision and land owners either should pay the expense or the public expense should be properly safeguarded.

3. Upstream Flood Control Improvements.

No plans have been formulated although the headwaters of the Muskingum, Miami, Mahoning, Scioto and other rivers may offer opportunities for stream bank planting and other measures to reduce silting of reservoirs.

4. Forest Recreational Development

Plans are being prepared for the development of recreational facilities in existing public forests and additional plans will be made as forest acquisition progresses. This includes the construction of small lakes and suitable camping facilities.

5. General Administration

A substantial amount of building, road construction and other improvement work could be undertaken on land already purchased or which could be purchased with available funds. The details of this work in both state and national forest are stated in appendix A.

Related Measures Essential to Capital Improvements

1. Land Acquisition. A combination of various estimates indicates that an area of approximately 1,000,000 acres of land in 28 counties will not be reclaimed for agricultural uses and should be purchased and reforested by the state and federal governments. Past purchases indicate an average cost per acre ranging from $5.00 to 8.00 for various state forests and an average of 6.23 in the Wayne National Forest.

2. Cooperative fire protection service. Only a moderate increase in cost above present expenditure would be necessary to give adequate forest and grass fire control.

3. Research. Some suitable sized tracts within the corn-belt should be acquired to determine and demonstrate effective forest management practices. More detailed research is needed in the hill area on forest management, forest economics and forest influences on water run-off and water conservation.

4. Surveys and inventories. The forest resources survey, completed in 38 counties, should be extended to the remaining 50 counties. Inventories and growth studies in public forests are also needed.

5. Maintenance of Improvements. Experience in the CCC program points to the need for maintenance of forest improvements. Such should be made only when the benefit will cover first and maintenance costs.

Other Measures Needed in a Program of Forest Conservation.

Two men are now employed to provide educational and technical assistance to private owners. At least eight more are needed.

Some form of subsidy to stimulate reforestation of abandoned land would encourage better land use. In such a program the public investment should be protected.

IV. ADJUSTMENTS IN AGRICULTURAL PRODUCTION DURING THE DEMOBILIZATION PERIOD

In this section, consideration will be given only to adjustments in Ohio's agricultural production during the primary phase of the demobilization period, i.e. in the twelve or eighteen months following the end of hostilities in Europe. As suggested by BAE, the assumption is made that war in Europe will end during 1944. What production pattern will be needed in 1945 to meet conditions prevailing then and in early 1946?

A suggested use of cropland for 1945 is given in Table 1, Column 4. For purposes of comparison, acreages of crops reported in 1943 and the goals for 1944 are also shown. It will be noted that the total area in intertilled crops suggested for 1945, viz. 5,306,000 acres, is only 31,000 acres greater than was reported for 1943, but 193,000 acres less than the 1944 goal for these crops. The 1944 goal for wheat, 1,650,000 acres, was greatly exceeded in that 2,075,000 acres were planted in the fall of 1943. Hence, unless there is very severe winter killing of wheat, it is unlikely that the 1944 goals for corn and soybeans can be attained. Their attainment would require the plowing up of more idle land than seems practical or of more rotation or other plowable pasture than is desirable.

The amount of cropland to be in sod in 1945 is estimated at 3,601,000 acres, which is greater than the amount in 1943 or the computed goal for 1944. An increase in the acreage of rotation pasture is desirable, and more clover and other seed crops than have been harvested in recent years are needed.

The total acreage of land used for crops in 1945 is estimated to be only 0.4 per cent higher than that of 1943 and 0.3 per cent lower than the goal for 1944.

Table I. Estimates of Use of Cropland, 1945 with Comparisons, Ohio

Use of Cropland	Acreage	Reported for 1943	1944 Goals	1945
Column	1	2	3	4
		1,000 acres	1,000 acres	1,000 acres
Corn, all	Planted	3,544	3,575	3,500
Soybeans, grown alone	do.	1,498	(1,650)	1,525
Soybeans for beans	Harvested	1,333	1,500	1,375
Tobacco, all	Harvested	21	24.6	26
Burley	do.	13.7	15.4	17
Other domestic	do.	7.3	9.2	9
Sugar beets	Planted	21	50	40
Irish potatoes	do.	95	100	110
Processing vegetables, Commercial	do.	75	77.3	77
Fresh vegetables, Commercial	Harvested	15	15.8	23
Other intertilled crops, total	do.	6	(6)	5
Total cropland used for intertilled crops		5,275	5,499	5,306
Oats	Planted	1,326	1,150	1,132
Barley	do.	45	50	50
All wheat	do.	1,688	1,650	1,700
Oats for grain	Harvested	1,226		
Barley for grain	do.	40		
Rye for grain	do.	76	75	70
Buckwheat	Planted	21	(10)	9
Adjustment for multiple use		- 40		
Total cropland used for small grains		3,116	2,935	2,961
Hay, all tame--except soybean and small grain hay	Harvested	2,263	(2,250)	2,257
Hay, all tame	do.	2,429	2,415	2,420
Seeds, hay and cover crop, all	do.	227	454	400
Rotation (cropland) pasture		1,065	(1,050)	1,200
Adjustment for multiple use		- 131	- 284	-256
Total cropland used for sod crops		3,424	3,470	3,601
Total cropland used for crops		11,815	11,904	11,868
Idle cropland		845	752	772
Total cropland		12,660	12,656	12,640
Other plowable pasture		2,997	2,997	2,997
Wild hay	Harvested	6	(5)	5
Other land in farms		6,245	6,250	6,266
Total land in farms		21,908	21,908	21,908

CROP YIELDS

Crop yields for 1945 are estimated the same as in the state report on wartime production capacity. These per-acre yields are given in Table 2.

Table II.—Estimates of crop yields per acre, 1945 with comparisons
Ohio

Crop	Acreage	Unit	Yield per acre: Probable on maximum acreage	Yield per acre: Probable in 1945
			Units	Units
Corn, all	Planted	Bu.	49.0	
Soybeans for beans	Harvested	Bu.	19.8	
Burley tobacco	do.	Lb.	850	
Other domestic tobacco	do.	do.	1000	
Sugar beets	Planted	ton	8.5	
Irish potatoes	do.	Bu.	110	SAME
Oats for grain	Harvested	Bu.	34.4	
Barley for grain	do.	do.	26.0	
Winter wheat	Planted	do.	20.7	
Spring wheat	do.	do.	19.0	
Rye for grain	Harvested	do.	15.0	
Buckwheat	Planted	do.	16.4	
Hay, all tame	Harvested	Ton	1.35	
Wild hay	do.	do.	.9	

LIVESTOCK PRODUCTION

Estimates of the production of livestock and livestock products in 1945 are given in Table 3. Compared with 1943, the 1945 estimates call for an increase of about 3 per cent in the number of dairy cows, a reduction of about 1/6 in the number of brood sows, a 2 per cent increase in the number of hens, and a 15 per cent reduction in the number of chickens raised. These shifts are in line with feed supplies estimated to be available from 1945 crops.

The production of milk per cow in 1943 was only 4600 pounds. By 1945-46 it is to be hoped that the feed situation will improve so that production per cow can be raised to 4,700 pounds, which is 70 pounds below the 1942 figure but the same amount above the 1937-41 average. Another needed change is the marketing of hogs at lighter weights.

Table III. Estimates of production of livestock and livestock products, 1945, with comparisons, Ohio

Item of livestock and livestock products	Unit	Reported for 1943	Estimated for 1944	Estimated for 1945	Estimated for 1946
		1,000 units	1,000 units	1,000 units	1,000 units
On farms January 1:					
Horses, mules and colts	Number	398	374	352	330
Cattle and calves, all	do.	2,196	2,235	2,250	2,285
Cows kept for milk, 2 years +	do.	1,094	1,110	1,125	1,135
Other cows, 2 years +	do.	88	94	94	94
Sheep and lambs, all	do.	2,303	2,212	2,240	2,240
Ewes, 1 year +	do.	1,434	1,432	1,430	1,430
Hens and pullets	do.	22,541	25,246	23,000	23,000

		Reported or estimated for 1943	Estimated for 1945
		1,000 units	1,000 units
During year:			
Sows farrowed, spring	do.	551	450
Sows farrowed, fall	do.	488	400
Chickens raised	do.	38,631	33,000
Commercial broiler production	do.	4,125	3,200
Turkeys raised	do.	806	850
Milk cows, average during the year	do.	1,077	1,109
Milk produced	Pound	4,954,200	5,200,000
Eggs produced	Dozen	225,250	235,000
Cattle put on feed	Number	132	125
Sheep and lambs put on feed	do.	291	325
Average weight hogs sold or butchered	Pound	240	220

THINGS NEEDED TO ACHIEVE THE INDICATED ADJUSTMENTS

Estimates of certain types of equipment needed in 1945 are given in Table 4. In the case of tractors, and some of the tractor-drawn equipment for which estimates are given, it will be noted that the numbers expected to be on farms in 1944, less numbers needed to replace worn out equipment, plus numbers needed to increase the total equipment in use, would result in the same numbers estimated to be needed for maximum production in the state report of July 1943.

Table IV. Estimated number of specified types of equipment that will be on farms in 1944 and additional number that would be needed for attainment of 1945 production, with comparisons, Ohio

Kind of equipment	On farms for use in 1943	Expected to be on farms for use in 1944	Additional number needed in 1945	
			To replace worn out equipment	to increase total of equipment in use
	Number	Number	Number	Number
Tractors, total	111,300	115,300	15,300	20,000
Wheel type	110,400	114,430	15,170	19,830
Crawler type	900	870	130	170
25 hp. or smaller	675	650	100	130
26 to 50 hp.	225	220	30	40
Trucks, total	36,900	35,200	5,200	10,000
Jeeps				6,000
Other equipment				
Combines	13,200	14,500	2,000	3,700
Corn pickers	10,700	11,700	2,000	6,000
Pick-up balers	1,800	2,000	200	1,000
Tractor cultivators	74,800	81,900	7,500	15,600
Barbed wire (rods)			12 million	3 million

It should be pointed out that, in the opinion of the state committee, emphasis should be given to those factors which will increase yield per acre or per animal rather than to increasing acreage of crops. The cropping and livestock practices needed to accomplish these ends are given in other sections of the report, as well as in the July 1943 report on "Maximum Wartime Agricultural Production in Ohio" and in the "Ohio Food Production Handbook, 1944."

V. LIVESTOCK IMPROVEMENT

I. DAIRY CATTLE

A. Disease Control.

1. Probably the most important thing to consider is a rigid disease control program. Tuberculosis in cattle has been brought under control, but the infrequency of retesting cattle makes our herds subject to recurring infections, particularly in areas which had unusually heavy losses in past tests.

We recommend that an all over test be made of every herd and animal owned in the state as soon as the war is over, and that plans be developed for a complete test every three years thereafter.

2. Bang's Disease and its toll on the industry are well known. The loss runs into millions of dollars yearly in reduced production, loss of calves, consequent difficult breeding, etc.

Therefore, we recommend that steps be taken to enlarge the Bang's testing program on an area basis made yearly on every herd and animal in the state.

Also, that in herds where infection exists, we recommend that calfhood vaccination be practiced and that the state pay for the cost of testing and provide vaccine free to owners making use of this service.

3. Mastitis also is becoming a disease of such seriousness that a control program should be worked out for the state. Increased research into the control methods that are best adapted for field use should be made.

These three disease control programs could make a great demand on the services of qualified veterinarians. Every available man could be used to advantage.

B. Increased Efficiency in Feeding and Management.

1. Increased use of legumes and pasture is necessary in order to supply sufficient low cost protein in the ration. The present method of growing soybeans for protein supplement is fast depleting our soils and allowing erosion to set in. A return to grass farming will of necessity have to come if this is stopped.

2. It is an established fact that production testing is necessary to reliably guide the dairyman who is feeding properly, culling intelligently and in planning future breeding programs.

Testing associations should be developed which will give this service to the rank and file of dairymen in the state. To do this at least six to eight persons could be used, on the average, in each county of our state. This group of five hundred to 650 persons could be employed in such a program. We believe the state could well afford to subsidize such a program.

C. Breeding

Artificial insemination of cattle is now a practical means of propagation. In a properly organized area, one insemination could impregnate from 2000 to 3000 cows per year. It would take at least 250 inseminators to cover the state

and breed about 40% of our cattle. Such magnitude is entirely possible with sufficient assistance to organize and service this field of endeavor.

Coupling production testing with the artificial insemination associations would make possible great masses of records useful in proving the worth of the bulls used and in selecting out the desirable cow families for foundation improvement groups.

This development would require many trained persons in tabulating records, keeping office files, etc. Also, a number of people trained to analyze such records would be needed.

A third method of improvement possibilities is through the type classification of all herds--grade and purebred--done as a service to dairymen. This data could be used with production records to determine the most desirable animals from a type basis. This would require a number of trained judges of dairy type to inspect these herds.

II. PORK PRODUCTION

In enumerating the activities which should receive the attention of both producers and processors, in the post war period, it is practically impossible to suggest means of obtaining objectives. The relationships now existing between pork producers, pork processors and governmental agencies, have disturbed swine growers to the point where no doubt closer knit producer organizations will come as a part of a post war program. It furthermore seems probable that these organizations will give serious attention to the following points leading to an improved industry:

1. The placing of emphasis upon quality of market hogs.
2. An adjustment in type of hog to produce less lard.
3. The improvement of lard quality.
4. A study of the problem of competition between lard and vegetable oils.
5. The improvement of seed stock for efficiency in hog production.
6. Shifting swine productions to the areas best adapted to the industry and discouraging it in areas less well adapted.
7. Making more rigid application of the principles of efficient management, including a coordinated program to maintain the health of all farm animals.
8. Determining sources of supply and best uses of protein supplements.
9. Greater use of forages and various manufacturer's by-products in pork production.
10. Improving marketing policies and methods in:
    a. Selling by market grades.
    b. Reducing marketing costs.

The organization and research necessary to accomplish the foregoing ends will require considerable additional personnel. The extent to which men will be employed will depend upon a full cooperation between Federal and State authorities combined with a demand on the part of producers and processors of pork to place the industry upon a high plane of efficiency.

III. BEEF PRODUCTION

A. Consumer Demand. Government contracts for army, navy and lend-lease now take about 55% of the beef slaughtered, so that government demands dominate the packer's operations. This and rationing have influenced the housewife's buying. Prices and points have diverted buyers to cheaper cuts heretofore unappreciated. Many men in the army have learned to depend on meat in their diet. This should prove an important factor in future meat consumption. In light of these indications it is reasonable to predict vast changes in meat merchandising. The popularity of boneless cuts as prepared and packaged for government order will be sure to carry over and some adaptations made for domestic use.

B. Packer Expediency. The packer has modified his procedure in order to fill government contracts, meet O.P.A. price ceilings and process the unprecedented heavy run of cattle at a profit in spite of a labor shortage. His buying has been influenced accordingly. He will proceed as a student of carcass yield to make purchases for intended use, rather than acting as a victim of scale records that tell only the story of dressing percentage, and this is where the interest of the producer comes in.

C. Producer's Necessity. The bulk of sales to packer buyers is of cattle of plainer grades and heavier weights. Many of the cattle slaughtered are of sufficient breeding and quality to grade higher if finished, but the present market will not pay for finish or high grade. So, it proves more profitable to feed the corn to more cattle of lower grade. Weight in the cattle not only increases the volume of beef produced but enables the packer to pay more since he can handle such cattle more efficiently. The man hours required to dress a 1400 pound steer are not materially greater than to dress an 800 pound baby beef, yet the steer yields 360 pounds more of carcass beef. Furthermore, much of the beef, whether on government order or for civilian trade, is merchandised as

boneless cuts, and there are about as many strokes of the knife made in boning a small carcass as a large one. All offal value, an important credit, item is in direct proportion to the size of the cattle. Graders seem to favor the heavier cattle.

D. What Is the Feeder to Do about It? In the future it would appear that more heavy weight cattle will be marketed if feeders follow the dictates of packers on account of prices they are willing to pay. This probably means that more feeders will use yearlings or two-year olds instead of calves, but it does not necessarily mean the disappearance of calves from feed-lots. It does perhaps mean a difference in feed-lot management regarding calves. Feeders should still find it profitable to buy or raise calves but to carry them longer on a growing ration before putting them on a full grain feed. The feeding of yearlings or two-year olds will lend itself more to the present set-up than was formerly true; also, the marketing of cattle with less finish in the face of present lowered prices would seem to be definitely indicated. However, in the face of all this situation any violent shift one way or another may not prove profitable to the producer in the end.

E. The Breeder's Concern. What all this means to the breeder is a matter for study. Whether the native bred yearling can compete with the range yearling as successfully as the native calf can compete with the range calf will depend upon the amount of pasture, roughage and shed space available to the farmer. The quick turn-over in baby beef has been one feature of breeding one's own feeders that has appealed to Ohio farmers.

F. Better Sires. One thing is certain--the continued use of better sires is of greater importance and more attainable than ever through the increased use of artificial insemination. By pooling their bull money and raking each bull serve ten times as many cows, fewer but much better sires can be had for the same cost.

G. Control of Disease. One important advantage the Ohio breeder of his own feeder cattle has over the range breeder is a much larger percentage calf crop. In order to maintain this advantage it is essential to keep the breeding efficiency of the cow herd at the highest possible level. The most common cause of impaired breeding efficiency is infection with Brucellosis or Bang's Disease. Calfhood vaccination has proved an effective and practical aid in the eradication of this disease, and it is likely to be used more extensively in the years to come.

H. Conclusion. There is sound basis for the conclusion that the average Ohio cattleman should plan his future operation to feed more yearling or even two-year old cattle instead of calves, on a ration derived more from silage, hay or pasture than heretofore, using only the best bulls obtainable if a breeder and keeping his cow herd at a high level of breeding efficiency by control of disease, especially Brucellosis.

However, we must recognize the tendency toward cycles. There will no doubt be a time in the not too distant future when the greater demand for weighty cattle of plainer grades will right itself and a better balance in the demand for cattle of the different weights and grades will be established.

IV. SHEEP PRODUCTION

Developments in Ohio sheep production during the post-war period should include the following lines of action.

A. Development of practices that increase efficiency in production of lambs and wool.

1. Rigid culling of flocks on the basis of production.

2. Parasite and disease control.

a. Extend the use of sanitary measures and drug treatments that control internal parasites.

b. Establish custom dipping services for all sections of the state.

3. Promote maximum use of improved pastures and better quality roughages.

4. Adjust flock-size to economic units.

5. Use of purebred sires.

B. Promote lamb and wool consumption.

1. Develop a dependable and steady volume of quality lambs offered on local markets.

2. Improve preparation of wool.

3. Support research and promotion of sheep products.

V. HORSE PRODUCTION

A. Horse Production vs Other Kinds of Livestock Production: Under what may be called normal or average conditions, the investment in launching any horse enterprise is high in comparison with other kinds of livestock. Usually it takes a long time to get the product to market, hence the turnover is slow. The element of risk is great. The rate of reproduction is low. Because of the increasing average age of horses and the increased use of mechanical equipment in solving the labor shortage, continued decline in the total number of horses for the duration is predicted.

B. Will the Demand for Horses Increase? It is impossible to make definite statement concerning the part which horses will play in post-war agricultural production. There are a few facts which thoughtful farmers will keep in mind as they formulate plans for the future.

1. The nationwide shortage of young work stock: The supply of work horses and mules is far below the number needed to offset deaths annually occurring. The mortality rate is in excess of the birth rate.

2. Will mechanized equipment for farms be produced in sufficient quantities for the duration to offset what is worn out and discarded?

3. Will our known supplies of petroleum be sufficient for post-war needs at pre-war rates of use?

4. Wage rates in the production of mechanized equipment have advanced and are likely to stay high, thereby increasing the cost of such equipment.

5. The possibility of the export of horses to Europe following the close of the war. European horse stocks will be greatly reduced. Many of the farms are small and adapted to the use of animal power. There may be a demand for mares to rebuild depleted horse populations abroad.

6. There are thousands of small farms in this country where horses still serve as a dependable, flexible and economic source of farm power. Ohio has ~~100~~ 145,000 farms that ar less than 100 acres in size and ~~225~~ 205,000 farms that are less than 175 acres in size.

7. Twenty-three per cent of Ohio farm owner-operators are 65 years of age or over. One-half of all farm operators are over 50 years of age. During the post-war period, many of these workers must be replaced by younger men. In what type of power and equipment will these younger workers be interested?

8. Many farmers remember the low prices of farm products in 1932 and 1933. Should economic catastrophe occur following this war, surely there is the desirability of having enough horses and mules to protect farm power operations. ith the death rate of horses in excess of the birth rate, farmers are safe who breed their own horse replacements. They need not fear low prices because of over-supply and they are protecting their own farm power operations in case of crisis.

VI MARKETING AND DISTRIBUTING PROBLEMS

Marketing problems in the post-war period will include the following:

(1) Maintaining an efficient marketing system that will process and distribute agricultural products and supplies at low cost.

(2) Broadening the market outlet for farm products.

(3) Providing adequate bargaining power to the farmer in disposing of his products.

(4) Enable farmers to dispose of their output without the price of the whole product being determined by temporary surpluses.

More specific problems and desirable developments in the fields of dairy, livestock, grains, fruit and vegetable marketing are outlined.

Dairy Marketing

I. Transportation of Milk from Farm to Market

A. At the end of the war the problem of transporting milk from the farm to the buyer will be serious. Little has yet been done to bring about efficient use of equipment. Unless a major crisis in hauling develops, little will have been done by the end of the war with Germany.

B. Studies in Ohio have shown that nearly 20% of driving can be saved in most major markets in hauling milk from the farm to the buyer. efficiency is necessary for high real income.

C. Milk belongs legally to the farmer until it reaches the buyer, and the control and responsibility for efficiency in transportation should rest with the farmers through their associations.

D. It appears, from surveys, that approximately 300 to 400 milk trucks could be eliminated in country hauling.

II. City Distribution of Milk

A. The war has brought about many desirable efficiencies in the city distribution of milk products. At the end of the war, as equipment and manpower

become more plentiful, there likely will be a tendency to go back to the less efficient methods of distribution.

B. The major problem in maintaining these efficiencies will be in controlling competition and labor's efforts to create more work going back to old methods.

C. Research should be started immediately to determine the probable efficiency of war-time changes in city distribution of milk under post war conditions. If distributors and labor, the elements directly affected, fail to retain efficiencies found desirable for the post-war period, organized producers should establish and maintain a marketing system which will do the job with maximum efficiency and at least cost commensurate with services rendered. Intervention of government agencies may be necessary in bringing this about.

III. Sorting of Producers for Different Type of Markets.

A. Producers at the end of the war will be arranged in a different pattern than at the beginning. Where population has increased, greatly due to location of defense plants and army camps, the number of producers selling to city distributors has increased.

B. Cooperatives, boards of health, the distributors will need to work together to keep producers best qualified for making milk for city distribution in the fluid markets and to direct producers unable to meet high standards of quality or unwilling to produce evenly throughout the year to manufacturing outlets.

C. Some variation of base and surplus or producer quota plan may be used as a sorting device. Control of transportation by cooperative associations will aid materially. Strict enforcement of board of health regulations also may be a needed measure.

D. Some small additions to manufacturing capacity may be needed in a few instances. Some distant receiving stations can be closed where city requiremtns are shrinking. The University should assist in training junior executive and field workers for the dairy industry. Much work with producers will be needed.

IV Establishment of Bargaining Processes for Effective Price Negotiation.

A. Prices are now influenced by a great many governmental controls. Many of these will be changed and some withdrawn entirely as the end of the war approaches. As these controls have multiplied, established price making machinery has fallen into disuse.

B. The objective of sound collective bargaining is to arrive at prices that will maintain the supply needed for a high level of consumption, and at the same time, distribute the consumers dollar so that no group has an unfair economic advantage. Milk solids, not fat, are not given sufficient weight in pre-war formulas for pricing milk used for manufacture. These formulas need revision.

C. Negotiations concerning prices to be paid producers, wages to be paid labor in distribution, and prices to be charged consumers for fresh fluid milk should include representatives of producers, processors, labor, and consumers where they are properly organized for collective bargaining.

D. In some instances, new facilities for proper handling of surplus milk may be needed. The University can contribute by training personnel, and by furnishing factual data on which to conduct price negotiations.

V. Improving Market Outlets for Milk in Southeastern Ohio.

A. Southeastern Ohio lacks satisfactory markets for milk. Towns are too small to justify individual collective bargaining cooperatives. Volume of fluid milk on many farms is too small and roads are too poor to justify milk trucking service to distant processing plants. This area is tied by

soil and topography to grass farming. Farmers have been handicapped by the decline in value of butterfat in relation to milk solids not fat.

B. Producers of fluid milk in this area have formed bargaining cooperatives which were relatively ineffective until several cooperatives joined in employing a single qualified manager. Further combination of small cooperatives is desirable. A federation with over-all directorate is recommended. To provide an outlet for fluid milk, it is recommended that a processing plant, with daily capacity of 100,000 pounds of milk and designed for expansion, be located in or near Jackson County. Branch receiving stations should be opened to conserve trucking and build volume in the central processing plant. Lack of aggressive leadership among producers and the small surplus of capital for investment in marketing outlets in the hands of producers are major obstacles to be overcome.

C. The fluid milk cooperatives of Southeastern Ohio should lead in improving market outlets by investing capital in a processing plant and providing personnel to develop the project.

D. The cost of processing plant and equipment is estimated at $80,000. Each subsidiary receiving station involves the expenditure of about $10,000.

Livestock and Meat Products

I <u>Operational Cost will be Major Problem</u>

A. Operational costs will become a major problem beginning about 18 months after the defeat of Germany. This will be due to present high cost of personnel, a decreasing volume of business and an excess capacity of facilities geared to handle the present maximum production.

B. Low costs and not wider margins between producers and consumers are desired but margins are largely dependent on salaries or wages of paid personnel, and a large volume of business. With a smaller volume expected it will be very difficult to keep margins from widening.

C. To keep margins from widening unduly, operational costs must be kept in line. This may mean reduced employment, lowering of salaries, and the elimination of high cost units as the shift is made to a peace time basis.

D. As volume decreases, there will be less need for labor, facilities and equipment.

II. Consolidation of Marketing Outlets Available to Farmers are Expected to Continue.

A. Market outlets available to farmers are expected to go through a reorganization, expecially in the western part of the state. The present trend now is toward the development and establishment of several major marketing groups within the state. Of these, probably one or two will be cooperative, two or three will be privately owned, and one or two packer dominated or controlled.

B. Too large a number of markets for farmers leads to inefficiency, but an adequate number well located is desired. A further consolidation of many market outlets would seem desirable.

C. Consolidation will probably proceed normally. Generally this development should be looked upon favorably. The cooperatives should be encouraged to adjust quickly to this expected development so as to maintain not only good markets for farmers but to act as pace setters for others in the field.

D. Some construction and labor will be required to remodel, and to expand the facilities and equipment for the fewer market outlets selected as consolidation proceeds.

III. Meat Slaughtering Establishments Must Be Ready to Meet the Changes Expected in Meat Distribution.

A. Slaughtering establishments of all sizes are expected to continue in the field. Small and medium killers no doubt will engage in an increased

amount of custom killing for certain areas and communities. Many plants are not now so organized or equipped to slaughter livestock and market the meat products obtained therefrom at sufficiently low costs when the anticipated changes in production develop as the United States reconverts to peace time operations. The high cost slaughterers may commence to "feel the pinch" after the lifting of government controls and regulations after the war ends.

B. Modern equipment, well arranged, and sanitary facilities are desired in meal slaughtering plants. The difficulty is that many present plants are undesirably and poorly arranged and would probably have to be replaced or rebuilt. Will the margins or profits after taxes be such as to permit or justify these changes?

C. Governmental effort and attitude should not prevent or restrict unduly the slaughterers in adjusting to the peace time conditions. Cooperatives will probably be compelled to enter the meat slaughtering field.

D. Some labor and materials will be needed for the remodeling necessary in order for business units to remain on an efficient basis.

IV. An Increased Use of Frozen Fresh Meat, Stored in Community Lockers or Home Freezer Units, Is Expected Shortly after the War Ends.

A. The present trend in the establishment of cold storage food lockers is a significant development to meat slaughterers. It is anticipated that home freezer units may become nearly as popular after the war as refrigerators are today. If this occurs there will be an increasing demand for local processors to custom kill livestock, cut, package and probably quick freeze meats, which can be stored either in community lockers or in the home units. This method of handling meat may be a factor to keep in line the margin or spread between the livestock producer and consumer.

B. If food lockers should develop rapidly, meat inspection, to guard the nation's health, should be expanded beyond what it is today. Possibly state inspection, rather than inspection under the control of individual cities, should be provided for intra-state slaughterers.

C. If the food locker industry develops rapidly, labor and materials will be required to supply the demand for community as well as home owned freezers. Slaughterers will want to consider making the necessary changes to serve those who will make use of food lockers.

V An Expanded Market News Service for Livestock Markets is Needed.

A. The present inadequate system of reporting livestock prices and other market information is unsatisfactory and undesirable. Cincinnati is the only market in Ohio that now has the Federal News reporting Service. All other markets are reported by private interests. Prices are not reported accurately in many instances or on a uniform basis by grades. Hence accurate compaison is impossible.

B. Adequate, uniform reports of prices and other marketing information for livestock markets, reported by a non-biased, disinterested service is the desired goal.

C. The extension of Federal-State reporting service should be the answer. Tha State of Ohio, up to date, has not shown the required interest. Neither has appropriations been forthcoming from the National Congress. Thus, accurate and adequate prices may not be available and our livestock price making institution may develop undesirable and unwanted situations.

D. Trained and Experienced Personnel will be needed.

VI Competitive Livestock Markets, Free from Undesirable Practices, Is the Goal of Livestock Producers.

A. With the elimination of many controls and war-time regulations when the war is won, undesirable marketing and discriminatory practices may and

probably will become pronounced at many local livestock, auction or concentration yard markets. There is at present a tendency toward relaxing regulatory controls, especially by the state

B. Markets, that are conducted by fair, honest operators, free from discriminatory and undesirable practices, should be and is the goal of a large part of the livestock industry.

C. The Packer-stockyard Regulation of our larger markets should be expanded to include our most important local markets. Our state control of marketing agencies needs an overhauling.

D. To carry out this desired program will require trained personnel and the necessary legislative action.

VII The Livestock Industry Must be Alert and Ready to Meet the Post-War Problems

A. Many marketing and processing problems will appear with the modification or elimination of governmental regulations, such as floor, ceilings, subsidies and "set aside" orders. The time and method of handling will be important.

It is believed that demand for meat products will change rather quickly after the defeat of Germany. Hogs of the "so-called meat type" rather than of the "lardy" type will be in demand. Lighter weight lambs will be wanted.

B. The livestock industry may be late in observing the changes and shifts that will take place following the close of the war. The problem will be to get the various segments of the industry to adjust or be ready to adjust to a peace time basis at the right time.

C. Research, regional in scope, must keep the livestock and meat industry informed and provide the facts which will aid in the solution of the post-war problems. Government agencies must give out the information desired and needed by the industry.

I. Produce Terminals

A. Antiquated terminals and wholesale and jobbing markets in some Ohio cities contribute to wasteful and inefficient distribution. In Cincinnati the existing market area is subject to traffic difficulties and recurring flood hazards. The Columbus market is crowded, badly located and poorly adapted to modern needs. The market in Cleveland is relatively new, and with some adaptation would provide opportunity for concentrating the wholesale food business in that city and demonstrating possibilities of self-regulation.

B. Ultimate modernization of these facilities, including possible provision for air-borne freight, is desirable.

C. In Cincinnati relocation offers little promise; safe, inexpensive and suitable sites are not available. Possibly elevating essential features of the market area in the present location would offer no insurmountable engineering or financial obstacles. The Columbus market can and should be relocated. In Cleveland the Northern Ohio Food Terminal probably could be extended as needed on a superstructure over adjoining low-level rail trackage.

II Wholesale Market Organization

A. Effective organization is lacking among wholesalers and jobbers in most Ohio markets and shipping areas.

B. Independent shipping and distributing agencies ought to be encouraged to collaborate where possible, to the end that unnecessary services offered solely for competitive purposes may be minimized

C. Needed post-war regulatory action in shipping areas or receiving markets probably will provide for some form of participation by the government with organized producers, distributors, and consumers. Efforts should

be made to bring about desired action by voluntary agreement, perhaps through creation of local committees or clearing houses, but with provision for enforcement of needed changes by regulatory compulsion if necessary.

III. Cooperative Marketing Associations

A. Cooperative grading, packing, and marketing of apples, potatoes, and some out-door vegetables are prime needs in Ohio.

B. Cooperative marketing organizations of producers should be encouraged in order to increase their bargaining power, to secure advantages of voluntary control, and to benefit from growing demands for produce in volume, of standard uniform quality and pack, and in garden-fresh condition.

C. An existing state-wide potato organization should be strengthened and encouraged to merge with an existing vegetable association in the Marietta district. Fruit growers should be included and a central sales office established. Country concentration points are needed in some areas.

IV. Market News

A. Ohio fruit and vegetable growers long have needed more complete market information. Jobbing prices and sales by commission merchants in receiving markets do not reflect with exactness prices received by the grower. From those sources he learns only indirectly what his crops are worth, and is left with some calculating and estimating to do to determine whether a given offer is in line with the market or not.

B. Federal market news service should be resumed in Cleveland. Periodical farm market releases by the Ohio Bureau of Markets and better coverage by the federal market news services are needed.

V. Packages and refrigerated Equipment.

A. Customary handling practices result in shipment of considerable excess bulk and inadequate protection of the product in retail stores.

B. New methods of packaging and extension of pre-cooling and refrigerated display should permit closer trimming of some leafy vegetables and root crops at the source. Topped carrots, if properly handled are fully as satisfactory as bunched carrots with tops, though consumers now prefer the latter. Costs may be lowered without sacrificing shipping or eating qualities of the product.

C. Encouragement should be given to development of refrigerated equipment--vehicles, pre-cooling and storage facilities, display and sales cases, home type freezing and storage lockers, etc.--and improved packages--protective films, plastics, and other new materials and designs.

VI Retail Employee Training and Consumer Education

A. Consumer buying of fresh fruits and vegetables is to a large extent unskillful and non-discriminating. Persons employed in retail produce establishments frequently are not well trained or well informed about the merchandise they handle.

B. Elimination of bottlenecks in the distributive system at the point of retail sale presupposes not only improvements in distributive facilities and handling practices but also effective programs of consumer education and employee training.

C. Collaboration of commercial organizations and educational institutions in sponsoring and conducting programs for these purposes is recommeded.

GRAIN MARKETING

I The farmers' cooperative movement needs to be strengthened. Existing organizations should establish more trading points. Existing organizations should actively seek added members. Existing organizations

should add new lines of business. More joint buying should be utilized.

II. The recent trend toward all feed mixing by the big companies should be checked and even reversed for a time.

III. The desirability of establishing several small scale soybean expressing plants should be investigated.

IV. Research is needed in marketing and processing costs.

VII OPPORTUNITIES FOR SETTLEMENT ON THE LAND AFTER THE WAR

Ohio offers very little opportunity for additional settlement on the land by bringing new land into cultivation. For decades the acreage of land under cultivation has been decreasing, this largely because of the expansion of urban areas, and the retirement of land from cultivation in the poorer land areas of the state. Land use studies in 1940 indicated that there were several thousand farm units in the southeast section of the state, the land in which would have been better used if devoted to forestry.

There is still much that should be done to improve the productiveness of the land now in farms as indicated in the section entitled "Development and Conservation of Physical Resources." Dairying, poultry farming, vegetable growing, and other intensive enterprises are expanding in Ohio, but this expansion is largely within the framework of existing farm units.

There is little to indicate that it would be desirable to decrease the average acreage in Ohio farms. Ohio farms in 1940 averaged 94 acres of which 44 acres were in harvested crops. The adoption of labor saving practices and machinery is increasing the acreage that a family can handle. While there are many farm units in Ohio which are above the family sized unit in acreage, there are many more which because of lack of acreage are uneconomic units. In 1940 Ohio had 9,109 farms containing 260 acres or more as contrasted with 40,164 farms containing less than 20 acres each. It would not seem desirable to look forward to any increase in the number of farms in the state in the decade to come.

Ohio agriculture should, however, be in a position to absorb additional man power after the end of the war in Europe. Since 1939 much man power has been drained from Ohio farms to become engaged in military service or urban enterprises.

The labor which has left the farm since 1940 has been replaced largely by the labor of farm women and children and by the older men continuing to farm after

the age at which they would normally retire. In 1940 about 23 per cent of all Ohio farm owner operators were 65 years of age or older. The age is probably now higher. It is to be hoped that after the war in Europe is over the farm women can cease the additional farm work which they have taken on during the war, the children can devote more time to school work and that the older men may be able to retire from farm work.

It is estimated that Ohio farms could absorb in the neighborhood of 50,000 additional full time workers at the end of the war in Europe. This is assuming that the war would end in 1944, and that the prices of farm products will remain reasonably good. Some of these men would return as farm laborers some as tenants and some as owner-operators.

Agriculture should not be looked upon as the dumping ground of the industrial unemployed after the war. For decades agriculture has been an overmanned industry. Normally 50 per cent of the young people leave Ohio farms to seek a livelihood elsewhere. It would seem, therefore, that agriculture should be expected to absorb considerably less labor than the amount which has left the farm since 1940.

Surplus Military Lands

Since July 1940 there have been in the neighborhood of 50,000 acres of land required in Ohio for military purposes, the greater part of this lies in three tracts. Probably one-half of this area or 25,000 acres should be returned to agriculture soon after the end of the war. If these farms averaged 100 acres this would make 250 farms; if 160 acres, 156 farms. It would seem desirable for Federal Agencies to confer with State and local agricultural agencies to devise plans for returning this land to farm use. In disposing of the land the first chance should be given to the former operator, the next chance to ex-service men. The military authorities should decide before making plans for the disposal of the land whether it is desirable to have in mind the possibilities of again

wanting to repossess the land in the event of another war. Since on the most of this land roads have been obliterated it would be desirable for the authorities disposing of the land to confer with county engineers before breaking the tracts up into farm units to be disposed of. If the land is to be sold it should be disposed of to those who will operate the land, and at prices which are not inflated.

DRAINAGE

There are no longer any large areas of undrained swamp land in Ohio.

Ohio farmers have already constructed 25,000 miles of county outlet ditches at a cost of $36,000,000. This does not include a much larger investment in private drainage on their own land. Much of this investment has been in the Black Swamp area of northwestern Ohio.

The most important drainage job now is the maintenance of existing drainage installations. At least 15,000 miles of county ditches are in need of reconstruction or recleaning. Many of these ditches need redesigning rather than a mere "clean out" to bring them to their original specifications. Individual farm drainage in this area needs to be improved and extended.

The recent emphasis on soil conservation suggests the need for developing farm practices and ditch design that will reduce the rate of silting of drainage ditches. In the hilly sections of the state there are many small, fertile bottom land areas that can be economically made fit for cultivation by drainage. This practice will make it possible to retire much erosive hill land from cultivation.

One of the greatest drainage needs in Ohio is the development of a practical plan for systematic maintenance of public drainage structures.

VIII. TENURE PROBLEMS

Many aspects of the farm tenure problem and lines of action for its improvement during the adjustment period will depend upon the future course of farm land prices. Should land values appear inflated at the end of the war, then it would be unwise to encourage the widespread buying of farm land on the part of returning soldiers. It might be a wiser policy to rent until the future course of land values has become more evident. Declining land values along with low operating profits were characteristic of the period from 1920 to 1933. On the other hand should it appear at the end of the war that farm land values are still in keeping with future prices of farm products then farm ownership should be encouraged. Farm ownership involves a relatively large investment of capital and a slow rate of turnover.

Ohio farm land values have been rising since 1933. By the end of 1943 they had attained approximately the level of 1915. During the year 1943 land values rose about 1 per cent per month. Poor land and poorly improved farms seem to be showing a greater percentage rise in price than good farms. Thus far there has been little evidence of speculative buying for resale. More land is moving into the hands of prospective owner operators than is being sold by owner operators. Purchases by those who do not expect to operate the land have averaged 28 per cent of the total in 1942 and 1943. Many city people are buying farms. To the extent that this means the replacing of a farmer-owner operated farm by a tenanted farm, this may be considered as an undesirable trend. To the extent that the new buyer is a better landlord than the former owner there may be some favorable aspects to the trend. There is some evidence that the city buyer is more inclined to be willing to invest the money necessary to improve the farm.

In view of future price uncertainties, there would be no basis for saying that up to the present time Ohio farm land prices have become unduly inflated. To sustain present land prices would probably require a price level for farm products at least 25 per cent above that of 1939. Any further rise in land values would,

therefore, only appear safe if the price level following the war will be sustained for some years above that level. A favorable element in the situation is the fact that thus far farm owners have been reducing their mortgage indebtedness. Should farm land prices rise much above that now prevailing, consideration should be given to the enactment of devices which will discourage speculative buying and selling.

The predominant tenure pattern of Ohio should be that of the owner operated family-sized farm. The committee feels that farm ownership on the part of the operator should be encouraged at every opportunity. As to the size of the family-sized unit, the number of acres would vary widely as it does today, depending upon the type of farming. It would be reasonable to assume, however, that with the adoption of labor-saving devices the acreage in the family-sized farm will continue to increase. Family-sized farms should be encouraged to achieve the many advantages of large scale farms through cooperative organization for buying and selling. An ideal situation would be a farm large enough to provide full employment for the operator and his family; one that could be made to give full employment to a grown son as well as the father for a period of years before the father is ready to retire. One of the great difficulties in maintaining a high degree of farm owner operatorship is the constant shifting of equities in the farm to the cities through inheritance. The addition of a second house on many farms would be an inducement for the son to stay on the farm or to return to the farm after the war.

In 1940, approximately 26 per cent of Ohio farm operators were tenants. The percentage has not greatly changed for the past 30 years. While the ownership of farm land by the operator should be encouraged at every opportunity, it is recognized that with a fluctuating price level land ownership involves risks. It also involves the securing of credit. Tenant farming has its place in Ohio agriculture.

During the period following the war it is going to be very essential that there be improvements made on tenant operated farms as well as on owner operated farms. Essentials of a good lease are that the farm be able to produce efficiently, that

there be an equitable division of the proceeds, that provision be made for the maintenance and improvement of the real estate, and that the tenant be given a reasonable degree of security.

The ownership of farm land should be regarded as a public trust. Land is a public asset which should be maintained and improved. It has been the tradition of Ohio farming that the owner makes the capital improvements on the rented farm. It is not as essential whether the owner or the tenant makes the improvements as it is that they be made. The run down or poorly improved farm is profitable to neither the owner or the operator. In those instances where the land owner is not in a position to make the needed improvements, provision should be inserted in the lease which will allow the tenant to make the improvements and be assured of the unexhausted value of such improvements at the end of his tenure.

Provisions which give the tenant six months' notice if he is not to have the farm another year should be more generally included in Ohio leases.

A type of land occupancy which is becoming of increasing importance in Ohio is that of the part-time farmer. From one-fourth to one-third of Ohio farms were occupied by part-time farmers in 1940. As a state which has a close proximity between agriculture and industry, it is to be expected that this type of occupancy will continue to prevail if not to increase. Part-time farming, however, should not be regarded as an insurance against unemployment by industrial workers. Studies made by the Ohio Agricultural Experiment Station would indicate that residence on a tract of land in the country by the industrial worker should be regarded as a means of adding to other income rather than as a means of securing the essentials of life.

Many Ohio farmers depending upon hired help for the greater part of the year are going to find an increasing need for a tenant house on the farm which will be attractive and provide inducement to the hired man when he considers the relative attractions of the farm as contrasted to city employment. More farmers will find it desirable to so organize their business as to give full employment the year around.

The return of ex-service men and war workers to sub-standard living on marginal farms is to be avoided so far as possible. The best preventive of such a return movement of population will be to maintain full scale industrial production and employment opportunity. Other activities can lessen the amount of settlement on submarginal land. For instance, the continued incorporation of submarginal lands into state and national forests; the last session of the Ohio general assembly gave additional legislative encouragement to the establishment of new state parks, lakes and recreational areas--land uses which will apply mainly to sub-marginal lands.

It is further suggested that the return movement of population to marginal areas be studied for the purpose of unifying the influence of agricultural and other agencies in respect to settlement on sub-marginal land. This is felt to be particularly important in respect to men returning from the armed services, some of whom, unless given direction and credit on favorable terms, are certain to settle on submarginal land and on uneconomic farm units.

IX CREDIT

Thus far during the war period the existing credit facilities for Ohio farmers seem to have been reasonably adequate. Farmers have been reducing their real estate indebtedness. Short term loans are being currently paid. Many farmers have accumulated reserves.

In spite of the fact that many farmers have accumulated resources during the war years there will probably be a tremendous demand for short time credit after the war if the programs of agricultural improvement suggested elsewhere in this report are carried out. Many farmers have applied their surplus income to the reduction of indebtedness, others may want to reserve for later use their accumulation of war bonds. With the end of the war many will want to start farming some of whom will have accumulated little from their salary while in military service. Buying equipment, remodeling or constructing new buildings, purchasing lime or installing tile drainage will necessitate credit adapted to the nature of the improvement.

Short term credit agencies will find it desirable to be well informed as to the purpose for which funds are borrowed and as to the period of time it will take for them to yield returns. Farmers should be encouraged to borrow from credit institutions loaning money at reasonable rates and to pay cash for the commodities purchased.

In view of the experience at the end of the last war it would seem desirable that there be initiated at once an intensive educational campaign as to sound investment policies. Many a farm was lost, or its development and operation seriously crippled from 1919 to 1925 by unwise investments in stocks and bonds over which the farmer had no control, and which all too frequently resulted in total loss. A little study of the situation would often show that accumulated funds could best be invested in the improvement of the farm. Remodeling buildings,

installing tile drainage, or the use of lime or fertilizer on most Ohio farms would probably yield a higher return than funds invested entirely beyond the farmer's control.

With the end of the war it is to be expected that many farms will change ownership. There will doubtless be a desire from many sources that liberal financing terms be extended to ex-service men who wish to purchase farms. This will have to be balanced against the effect that such a program of any extent would have upon land values in a state like Ohio where no new land is available, and against the uncertainties of land ownership due to future fluctuations in the prices of farm products. Any widespread program of loaning relatively high amounts for the purchase of farms should carry with it a program for stabilizing farm product prices.

It will be to the advantage of both borrowers and lenders if the policy is adopted of making a thorough appraisal of each farm before a loan is made. During the last war and the two years which followed, some of the most serious mistakes were made in loaning too high an amount on poor farms. There is some evidence that this experience may be repeated.

More mortgages should be drawn allowing for the prepayment of principal and interest to the end that the mortgage loan will be reduced as rapidly as possible when the income is available.

In view of the relatively large capital involved in farm ownership it would seem desirable that many ex-service men who desire to become established in farming should start as a tenant operator on a farm which provides an opportunity for satisfactory earnings. If loans larger than those normally considered good risks are made, provisions should be made for guidance to go along with the loan. Those who demonstrate their desire and ability to farm while operating on a tenant basis might later be extended the facilities of the tenant purchase program as now carried on by the Farm Security Administration.

X. SOCIAL SECURITY

Agricultural employment is excluded from coverage under the s cial insurance provisions of the social security program established by Congress in 1935, though rural people share in the public assistance programs and in the health and welfare services provided by the Social Security Act. It is suggested that continued study be devoted to the question of the advisability of extending the social insurance programs to agriculture and as to workable ways and means of administering such extended programs.

Particular attention should be given to the possible extension of old age and survivors insurance to cover agricultural families, including both laborers and operators.

The State Federal employment service should make more adequate provisions for meeting the needs of agriculture than prevailed before 1941.

These suggestions are based on several important considerations:

1. Agriculture bears a proportion of the costs of the present Federal-State social insurance programs through increased price of goods consumed by it, and through the increased costs of processing its products.

2. The wartime expansion of the non-farm labor force has brought many former agricultural workers temporarily into covered industries. Many will, in the post-war period, return to their former occupations. Unless coverage is extended, those workers will lessen or lose entirely their chance for insurance protection despite the contributions they have made. The lack of coverage in agriculture may tend to check the free flow of labor between agriculture and industry. It is recognized that the extension of coverage to agriculture would involve many new administrative problems.

3. In 1940 more than 100,000 farm residents were 65 years old and over and their need for security was attested by the fact that in 1941 about one-third of

these aged farm residents were receiving old age assistance for needy persons. The numbers of aged people on farms are increasing very rapidly.

4. In 1940 about 23 per cent of all farm owner-operators and 5 per cent of all farm tenants in Ohio were 65 years of age and over. Provision for old age retirement of these aged operators would induce many of them to give way to younger men seeking opportunities in agriculture in the post-war era.

Agriculture is covered under the Workmen's Compensation Law of Ohio, which provides workers with insurance against industrial accidents and occupational disease. All employers of 3 or more persons are required by the law to carry compensation insurance covering their employees. Employers of only 1 or 2 workers may voluntarily insure under the Act, but very few actually do so. Since a comparatively small number of Ohio farmers employ as many as three workers, the coverage is very limited. Means should be taken to the end that the coverage will be extended. The present educational campaign relating to farm safety should be given more and wider attention. A recent study showed that farm accidents in Ohio involved a human cost of over $7,000,000 annually.

XI. RURAL HEALTH SERVICES AND FACILITIES

A. Introduction.

Physical and mental health is a vital human resource essential to personal happiness, economic productivity, and social usefulness in war and in peace. In spite of their great importance health needs in rural areas particularly, have been too much neglected. Results from the Selective Service physical examinations of registrants and from other sources have uncovered rural health problems greater than had previously been recognized.

The amount of ill health in rural areas is already very great. The post-war period will see the return of large numbers of veterans with new physical and mental handicaps acquired from their war experiences. As a result the already high incidence of defects in the rural population will be increased. Moreover, the health services provided them in the Army and Navy are likely to create in the returning soldiers and sailors an insistent demand for continued adequate and high quality medical and dental care. High priority needs to be given to the development of sound policies and programs for the building and conservation of the health and fitness of rural people.

This report aims (1) to indicate some of the needs for post-war planning in the area of rural health, and (2) to point out the major goals or objectives of such planning.

B. The Rural Health Situation before the War

At the outset of the War per capita health needs in Ohio were in many respects as great or even greater in rural areas than in urban areas. Health services and facilities were however, heavily concentrated in the large urban centers where they were inaccessible to most farm and village people. Health resources in the form of professional personnel and equipment of all kinds were generally distributed, not according to actual needs but according to the effective demand for their utilization. Such demand was greater in the urban areas where people were more health conscious, where there was greater ability to pay for health services, and where more high quality services were provided free or at reduced costs to those unable to pay. Rural people in general were getting less service and a poorer quality of service due in part to lack of ability to pay the high costs of adequate medical care, or to the fear of such costs, and in part to a widespread lack of understanding and appreciation of the nature and importance of good medical and dental care.

C. Rural and Urban Health Needs and Resources.

Once cities were considered the graveyards of humanity while by comparison, country living was considered in and of itself a form of health insurance. Now the indices seem to indicate that in Ohio the per capita amount of ill health is just as great or greater in the rural as in the urban areas. This reflects the fact that rural areas have not shared equally with cities in the application of effective health measures or in the control and prevention of disease.

Death rates. In 1940 the general death rate was nearly 4 per cent higher among rural residents than among urban residents in centers of 2,500 or more inhabitants. The infant death rate was 6 per cent higher among babies born to rural parents. The resident death rate was also higher among rural children and

youths up to 25 years of age and among very aged rural residents than among urban residents of comparable ages. In the age period 25-80, however, the urban death rates exceeded the rural.

Draft rejection rates. Available information indicates that during the last months of 1942 the percentage of rejections among Ohio selective service registrants was more than 20 per cent higher for farm workers than for all non-farm workers examined.

D. Indicators of Health Needs and of Health Resources among County Groups.

Ohio has 61 predominantly rural counties (population 50,000 and less), 19 counties of intermediate size (population 50,000 - 200,000), and 8 large and predominantly urban counties (population 200,000 and over). Health resources are concentrated in the 8 largest counties where they are geographically outside the range of easy accessibility to most rural residents of the state.

Before the war the predominantly rural counties of Ohio had one-fourth of the population but they had only 17 per cent of the physicians, 16 per cent of the dentists, and only 10 per cent of all general hospital beds. In contrast the predominantly urban counties with 53 per cent of the population of Ohio had two-thirds of the doctors and dentists and about three-fourths of the general hospital beds. Stated in terms of numbers per 100,000 population the smaller counties had only 90 physicians, 35 dentists, and 109 registered general hospital beds, while the very large counties had 160 physicians, 70 dentists, and 383 general hospital beds.

The 19 counties of intermediate size ranging in population from 50,000 to 200,000 had 22 per cent of the population, and for each 100,000 people had 92 physicians, 42 dentists, and 215 general hospital beds.

E. Suggested Lines of Action.

It is evident that there is a great discrepancy between what modern medical science has to offer and what people, especially rural people, get in the way of medical care. There are two major barriers which have limited the amount and quality of health services that have been utilized by rural people. One is social and psychological, the other is financial. There is widespread lack of understanding of the nature of good medical and dental care and of the fact that health is within limits purchasable. Neglect of health and particularly of the teeth is traditional in many areas. Moreover, health is usually considered in a negative sense as mere absence of aches and pains rather than a positive state of continuing maximum physical and mental efficiency and fitness. Along with this lack of understanding of the nature and importance of health conservation goes a widespread lack of ability to pay for high quality health services both curative and preventive.

In the light of these facts the general objectives of a post-war rural health planning program seem clear. Effective demand for health services must be created by removing the social-psychological and financial barriers, and ways and means must be found for supplying those demands in the most effective and lasting manner. New emphasis needs to be placed on preventive rather than merely curative services alone.

These broad objectives may be stated a little more specifically under 5 main divisions.

1. Health education. Health education aims at the development of habits, attitudes, and knowledge favorable to good physical and mental health. Such education may be carried out through the schools, the Agricultural Extension Service, and public health department, farm organizations, and especially through such local health associations as may be organized for post-war action. The content of such education should be carefully organized and planned to enlighten rural people as to the nature of the health problems which they face and to motivate them to take action leading to improvement, and conservation of both physical and mental health.

2. Increased quantity and improved quality of rural health services and facilities. An important immediate post-war aim should be to bring the quantity of rural health resources at least up to the standards already attained by the large urban areas. Authorities agree that the quality of medical services can be greatly improved through organization and coordination of those services and facilities.

a. The quantity of personnel and facilities. If the pre-war ratios of professional personnel and facilities to population in the 8 large metropolitan counties of Ohio be taken tentatively as standards for the rest of the state in the post-war period, then there would be required outside those large counties:

2,200 more physicians than before the war
1,000 more dentists than before the war
7,200 more general hospital beds than before the war
Much more auxiliary personnel and more diagnostic and therapeutic equipment

b. The quality of medical services. Many authorities agree that the quality of rural health services may be greatly improved through the organization of community health service centers. Such centers would include a hospital for bed patients, an out-patient department or clinic for the treatment of minor illnesses, and a diagnostic-therapeutic department equipped to serve both bed patients and out-patients.

Such community institutions should be organized as voluntary non-profit agencies. They would serve to attract and to hold high quality medical and dental personnel in rural areas.

Such non-profit organizations should be in a position to receive and to utilize the professional personnel and medical supplies and equipment to be disposed of by the Army and Navy Medical Corps during the demobilization period.

3. Making medical care available to the public. The accumulation of first rate health services and facilities in rural areas would be futile unless they could be delivered to those who need them. The spread-the-risk, share-the-cost system of payment of health and sickness expense should be applied through community health service associations. Under such a system each member contributes at a predetermined rate, and all receive basic benefits. In community-wide organizations contributions from employers, from private welfare organizations, or from tax-raised funds would probably be necessary to meet the needs of low-income groups and medically indigent members.

4. Preventive Practices. A major objective for planning rural health services revolves about the setting up of practical programs to lessen the incidence and severity of all illnesses and to conserve health. Such a goal calls for great improvement in rural public health programs, including those administered by public health departments, and the extension of adequate school health programs to all schools, rural and urban.

Some more specific objectives are:

a. Detection and prevention of communicable diseases.
b. Continuous health inspection and periodic health examination of every school child with plans for follow-up and correction of remedial defects.
c. Community first aid programs to care for accidents and sudden illnesses.
d. Provision for periodic health examination in prepayment medical care plans.
e. Provision of a healthy environment, in the home and its surroundings, in the school and in the community generally. Services of sanitary engineers should be available to serve all rural communities.
f. Control and eradication of tuberculosis, Bang's disease and other diseases in farm animals which present hazards to human health.
g. Promotion of mental health through community-wide mental hygiene programs both for groups and for individuals.
h. Promotion of adequate nutrition programs. (See section XII)

5. Research in the social, economic and legal aspects of medical and dental care. Post-war programs should be based on solid facts and sound principles. Careful research is needed to provide such a base. For example, more precise information regarding rural health needs, the costs of good medical care, and the ability of rural people to pay for health services should be assembled. There is need for studies of the acturial basis for the organization of prepayment medical care plans for rural people, and of optimum geographical and population bases for rural health organization.

XII. POST-WAR HOUSING AND EQUIPMENT

Farm buildings as discussed in this report include the dwelling and the service building because of the inter-relationship of function and use, in family living and enterprises on the family farm, which is typical and dominant in Ohio. It is agreed that this type of farming should be encouraged.

A. Situation of Buildings on Ohio Farms

There are approximately 233,000 farms in Ohio. An adequate farm building program has long been a serious need in Ohio's agriculture. Many farm buildings are beyond repair and need to be replaced. Some need remodeling and repairing. It is likely that the physical condition of farm buildings at the end of the war will not be improved but will be worse, due to the labor and material situation during the War.

An estimate of needed repairs and improvements on Ohio farms may be based on the improvements made on about 500 farms purchased with Farm Security help in Ohio during the past few years.

These figures show the value of all buildings at $7709. per farm. In order to make the buildings serviceable, these farms required the following minimum repairs and remodeling per farm:

Dwelling repair and remodeling	$373.
Outbuilding repair and remodeling	484
New buildings	305
Total construction	$1162

The following gives the number of new buildings constructed on these farms per 100 farms:

Dwelling	1
Barn	4
Poultry House	32
Privies	32
Corn Cribs	3
Machine Shed	3
Brooder Houses	11
Milk Houses	13
Garage	3
Miscellaneous	14

Assuming these farms are about average, the farms of Ohio should have building repair and improvement totaling 270 million dollars for the 233,000 farms.

These farms are valued at about one and one-half billion dollars, or $6200 per farm. The buildings on these farms have a replacement cost of at least $7500 per farm or a total of one and three-fourth billion dollars. This figure does not include modernization of dwellings which would be about $1000 more per farm for 90 per cent of the dwellings are now without equipped bath rooms and central heating plants. The modernization of dwellings would require about $200,000,000 for labor and equipment to install water systems, electric fixtures and equipment, bath rooms, and heating systems. Thus, if financing is provided and farmers wanted such improvements, the potential work and material demand is indeed large.

Yearly repairs and upkeep are usually figured at about 1 per cent of first cost. 1% of $1,750,000,000 is ~~$175,000,000~~ 17,500,000 per year. Materials usually are about 75% of the cost of barns and 50% in dwellings.

If the building improvements and repairs are really wanted and needed as shown by the Civil Works Administration Farm Housing Survey of 1934 figures, then the total expenditures would be about twice that amount or about $1000 per house and a similar amount for service buildings. Added to this could be $1000 per farm for modernization or a total of $3000 per farm and a state total of $700,000,000.

Factors that Present Problems for Solution to Make a Suitable Building Program Possible

1. The competition for the farmers' capital is so great for other legitimate needs that only a small amount will be used for buildings. Some of the major competitive needs are as follows:

   (a) The desire to enlarge the farm acreage by purchase of land.

   (b) The desire for new consumer goods and farm machinery will be great with all members of a family.

   (c) The desire to save money toward retirement is lifelong and therefore strong.

(d) The desire to sell the farm and quit farming in times of boom farm prices discourages consideration of building.

2. The lack of appreciation of the service of buildings to:

(a) The standards of living on the farm

(b) The efficient production of farm products

(c) The preservation of quantity and quality of farm products

3. The lack of skill in planning building programs as related to farm needs.

4. The lack of skilled mechanics to do the building work.

5. The lack of some of the materials necessary.

6. The lack of financing where credit or loans are necessary.

7. The general false concept that buildings are a necessary evil and therefore should be given minimum consideration in both effort and finances is a serious problem.

8. The lack of trained farm building designers and educators.

9. The lack of basic information in all areas of buildings. This is due to lack of research.

C. Suggestions for Solutions of Problems Confronting Better Buildings Program:

1. Educational program should be expanded to do the following urgent things through teaching:

(a) The essentialness of buildings to farm life and enterprises since this is not learned effectively any other way except through such experiences as loss by fire or storm.

(b) The methods of planning a farm building program to meet the needs of the farm program. This involves all phases of agriculture.

(c) The functions of buildings in attaining efficiency in farming in its phases of living and production including their importance to conservation of all natural resources, especially the family and the soil.

(d) The skills necessary to build and repair buildings.

(e) The reasoning processes to increase skill in analysis, evaluation and the creative thinking necessary to provide a program that works effectively toward the attainment of objectives.

(f) The science and art of farm buildings design for preparation of plans and specifications to engineers, architects, and other specialists.

2. Promote factors that will make building materials available at low cash cost to farmers who will not have cash or credit to buy:

(a) Improvement of farm wood lots and harvesting of same for farm building use.

(b) Make available low cost materials such as seconds in brick, tile, stone, metal, or wood that are serviceable.

3. Establish financing with loans that promote the security of ownership to the operator in order to insure efficiency and stability to farm enterprises and living. This may be in such factors as:

(a) Low interest rates

(b) Long time loans

(c) Payments adjusted to prices and production

(d) Amortization of principal

XIII. RURAL ELECTRIFICATION

A. Situation. Electric service has been extended to many Ohio farms since 1935, both by power companies and electric cooperatives. Approximately 75% of the farms in Ohio now have electric service. More farms will receive electric service between now and the end of the war. Probably between 45,000 and 55,000 farms will still be without electric service at the end of the war.

There will be an accumulation of demand for amny kinds of electrical equipment for the farm and home, some for replacement purposes, others for new applications.

Farmers because of labor shortages have turned to electricity, and have had first-hand experience with the savings made possible by the use of electricity. They will be anxious to extend the productive uses of electricity.

Adequate and satisfactory wiring in the past has been a bottle neck in the greater use of electricity. Many, if not the majority of farm wiring systems, will be inadequate to take care of the load satisfactorily that will be placed upon them.

New electrical equipment for comfort, convenience, and greater efficiency will be ready for production, and will give added impetus to the home modernization movement.

The demand for electrical equipment is likely to be so great that it may be difficult to purchase equipment best suited to the needs.

B. Desirable Objectives. Ultimate objective is 100% of the farms in Ohio with electric service. It may not be possible to realize that goal for some years. Electric service, however, should be made available to as many of the farms that do not now have it as is practical and in as short a time as possible.

The benefit that is derived from electric service depends upon the use that is made of it. The fullest use of electricity should be encouraged for comfort,

convenience, satisfaction, health, reduction of drudgery, saving of time and labor, efficient production, improvement of quality of products, lower production costs, and for processing an preservation.

Farm wiring systems should be safe, adequate, convenient and economical. iring systems should be rechecked, and enlarged to meet the present demands with provisions for future expansions.

Electrical equipment that is best suited to the needs should be selected. Best selections can only be made after careful study has been made.

C. Measures Needed. A complete survey is needed to show the locations of the farms that do not now have electric service.

efinite plans must be worked out as to how these farms can best be served.

Funds must be made available with a long amortization period and low interest rate.

In some of the less productive sections of the state, subsidies may be necessary.

Electrical equipment designed especially to meet the needs must be encouraged. Surveys will help to discover the needs.

Electrical equipment dealers, power companies, electric cooperatives, agricultural extension service, and other interested agencies should plan and carry on a cooperative and coordinated educational program. Such a program must be more than just selling equipment. It must sell new ideas and new methods. This educational program can be carried on by personal service, meetings, demonstrations, exhibits, radio, newspapers, magazines, farm tours, bulletins and circulars.

The research program in rural electrification should be continued and expanded. Efforts must be intensified to find profitable uses for electricity on farms and in homes.

D. Physical needs.

Funds needed for farms without service:

Line construction for 50,000 farms @ $300 each	-	$15,000,000
Farm Wiring for 50,000 farms @ $100 each	-	5,000,000
Equipment for 50,000 farms @ $250 each	-	12,500,000

Funds needed for farms with service:

Wiring improvement on 100,000 farms @ $100 each	-	$10,000,000
New equipment on 100,000 farms @ $250 each	-	25,000,000
TOTAL	-	$67,500,000

Of this total expenditure of $67,500,000, probably half will be spent for labor, in building lines, wiring buildings, and manufacturing, sales and installation of equipment.

In order to give assistance to farmers with their electrical application, power companies and electric cooperatives should have an adequate staff of rural electric service men who work directly with farmers. There probably should be a minimum of one rural electric service man for each 750 farms with service. That would mean about 250 rural electric service men at the present time, and about 320 when all of the farms have electric service.

These rural service men should receive basic training in rural electrification, and be supported in their work by research and extension. An annual budget of $25,000 for rural electrification research and extension is needed.

XIV AGRICULTURAL EXTENSION CAMPS

During 1943 the Agricultural Extension Service owned equipment or lands or both for camping programs in 8 areas of Ohio. Of these 8 camps, only 3 had approximately full equipment and facilities. Camps have been used by the Agricultural Extension Service for over 20 years. The range of interest includes camps for 4-H clubs, older rural youth, men, and women. Fourteen camp sites in other areas were also rented for camping programs.

The Agricultural Extension Service plans to develop a total of about 15 camping areas in Ohio. Some of these will be a continuation of present sites, others will be new. Thus, every county will be accessible to a modern camp. Blueprints are under way for post-war construction. Each camp should have an acreage ranging from 50 to 100 acres. Facilities should be sufficient to accommodate at least 200 people.

XV. NUTRITION

The primary object of agriculture is to produce food for people. The problems of human nutrition are, therefore, also problems of agriculture. Nutrition education must include explanations of the farm problems involved in the production of desirable as well as economic food products, and food producers must likewise be made familiar with the role their products play in human nutrition and the principles involved in most efficient utilization of farm resources. This will lead to mutual understanding of basic food needs and the economics of their production and efficient utilization. The ultimate result will be more harmonious producer-consumer relationships.

I. Present Situation

A. Nutritional status of agricultural population in Ohio

1. Surveys such as the studies of Consumer Purchases; Farm Family Expenditures; Foods Used by Rural Families, and The Preble, Harrison County Study show that approximately one-fourth of the families studied had diets which could be rated good, and that, in the main, poor food habits were due to low incomes, ignorance, indifference, inertia and food prejudices. Families who produced a generous percentage of the foods used in the homes had better diets than those families who produced little food for home use.

2. Evidence of nutritional deficiencies, indicated as the rsult of a study of the teeth of 31,986 children, made by the Ohio Department of Health, showed that 79 per cent had dental defects.

   One hundred thirty-seven families, which included 452 persons, representing 82 per cent of the F.S.A. borrower families of Champaign County, one of the top-ranking counties of Ohio from the standpoint of agricultural income per family, were given complete physical examinations by physicians and dentists. Thirty per cent of the total number examined had gingivitis, probably due to insufficient vitamin C in the diet. Of the 217 children examined, ranging in age from 4 weeks to 20 years, 10.6 per cent were anemic while 8.7 per cent had gingivitis.

3. Observations:
   The nutritional status of families in Ohio varies widely with knowledge of food needs, skills in preparation and serving of foods, income, size of family, individual eating habits, family customs and the amount of home food production and preservation.

   The families having the poorest diets are generally those with the lowest incomes, living on farms with the poorest soil, and those having the largest number of children. The lack of energy and managerial ability which often characterize these families may well be a result of life-long inadequate diets. In these families, where there is the greatest need for increased garden and food preservation, the mother has the least time for these activities, because of the demands of child-bearing,

child-caring and home management. These are the families in which both children and adults are often undernourished.

B. Poor Diets Are often the Result of:

1. Low incomes:
Families with low incomes necessarily have to use a large percentage of their income for food. Studies which have been made in Ohio as elsewhere have shown that food habits improved as the amount of money for family living increased.

2. Inadequate distribution of supplies contributed to faulty nutrition. Generally speaking, the important foods are fairly well distributed in city markets. However, in the small villages, there is a very limited supply of fruits and vegetables.

3. Traditional food habits have a direct bearing on the food choices of the family and often prevent the acceptance of many of the protective foods in the family diets. To a large extent the lack of knowledge, indifference and inertia all have their influence on food consumption habits of the Ohio families.

C. Extent of Home Production of Food for Family Use and Its Relation to Good Diet.

It has been shown that the families having good or excellent diets have more home produced food per person than those with fair or poor diets. In the Preble, Harrison County Study it was found that the families having home-produced milk, eggs and vegetables, used the foods in greater quantities than those families who purchased these foods for home consumption.

D. The War Situation Has Affected Food Consumption.

1. Food rationing:
Food rationing has increased the interest of people in the nutritive value of foods. Many people have gained some knowledge of nutrition because they felt the need for it in making adjustments to the War food situation. Nutrition education has been helpful here.

Decreased sugar consumption has had a favorable influence on food habits. Vegetable consumption has been increased due to more home production and preservation. Some changes have probably been made in food dietary patterns through the use of unaccustomed foods.

While rationing has distributed scarce foods fairly among different segments of the population in the same area, there appears to be some inequality in the availability of scarce foods in different parts of the state. Some of the rationed foods that are often not available in the crowded industrial centers are plentiful in the rural parts of the state. These food shortages in industrial areas, where influx of workers has been great, seem to be due to the fact that food quotas are based on population figures which are not current. In some of these crowded areas, restaurants regularly close early in the evening because they exhaust their supply of food. Industrial workers, arriving too late for dinner, often drink at the bar instead of eating, as the bar is kept open after the food area of the restaurant is closed.

2. Shifts in Income levels
Low income families have more money to spend and are buying larger quantities of food. They probably are eating more meat and other higher priced foods than before the war.

3. Food supply and price changes
Food supply is shortest in industrial areas of the state due to the influx of population and the fact that food quotas are based on past census figures. Food for industrial workers presents a real problem. Feeding facilities in and near industrial plants are in some instances inadequate and result in dissatisfaction and low morale among the workers.

Price changes upward have worked hardship on families and individuals with fixed incomes.

4. Increase in Employment of homemakers
Many families in industrial areas suffer nutritionally because the homemaker has full-time employment outside the home. The homemaker often does not have the time and the energy necessary to feed her family in wartime to meet the food requirements. Labor shortage makes it impossible, as a rule, for her to hire the needed home help. In addition, she frequently has little knowledge of food and nutrition. The haphazard meals which result seriously affect the nutrition and health of the children. While the federal program for care of children of working mothers is relieving this situation to some extent, this program reaches only a small proportion of the families.

E. Results of Present Program in Ohio to Improve the Level of Nutrition.

The school lunch program has helped improve the diets of many school children. The program sponsored by the United States Office of Distribution has reached 120,356 children in 676 schools. Through Agricultural Extension, Farm Security Administration and other agencies much has been done to encourage home production and preservation of food. A state food preservation committee made up of representatives of the various state agencies interested in food and a sub-committee of both State Victory Garden Committee and the Nutrition Committee has sponsored a state-wide program in food preservation in homes and in community preservation centers.

State, county and local nutrition committees are organized and are helping to coordinate the nutrition activities of the various groups and agencies and to stimulate the development of both wartime and long-range nutrition programs.

The United States Office of Distribution maintains an industrial feeding service through which advisory assistance is given to management in industrial plants in setting up and maintaining infeeding facilities as well as nutrition education of workers and families.

In spite of the extensive educational campaign in nutrition carried on by the various agencies there is still much to be done to influence people to improve food habits.

II. Desirable Objectives

A. The nutritional goal is food that approaches for everyone the dietary allowances as recommended by the Food and Nutrition Board of the National Research Council.

B. Major problems involved in attaining this goal:
1. Convincing people of the need for improvement in dietaries.
2. Development of programs to bring good nutrition within the reach of all. This involves making the food available as well as teaching about food needs.

III. Remedial Measures

A basic consideration in planning for improved nutrition of a population involves; (a) some understanding of the many problems involved and the many agencies concerned; and (b) close cooperation among the agencies in attempting to solve the problems.

A. General

1. A planned agriculture to assure provision of those foods which are essential to good nutrition may require shifts in production. This program of planned agriculture should also consider the relationship of the soil to the nutritive value of plant foods produced on it, and conservation of the soil. (See section on agriculture.)

2. Indispensible to any program for improved nutrition of the state population is the recognition of the economic factor. Many persons have poor diets because they lack the means to purchase good ones. Lack of purchasing power is a fundamental problem to be solved. To increase purchasing power would include improved distribution of income; adjustments in man-land ratio; changes in tenure or lease arrangements for rural people and some means of either raising incomes, or lowering prices, or both, for large groups of the population. (See Economic section.)

3. As an aid in planning adjustment of farm production to the needs of the community, the use of the well-planned food budgets as set up by the Bureau of Home Economics and Human Nutrition is suggested. These food budgets can be adapted to the specific conditions of the state.

4. In connection with food distribution or marketing, it is suggested that market facilities be so planned that buying desirable food is made convenient and easy for persons concerned; and that some facilities be provided for helping such persons select the foods most suited to provide for nutritive needs.

5. Some attention should be given to legislation concerning food. The enrichment of certain food, such as wheat flour and bread, and perhaps other cereal products in regard to certain constituents; salt in regard to iodine; some fats in regard to vitamin A; and, if it is found desirable, other products should be considered.

At the same time there should be critical examination of tax programs affecting food products so that there is no unjust discrimination against any wholesome food product.

6. Advertising exerts a potent influence on food buying habits and efforts should be made to assure food advertising which will serve the public interest in securing satisfactory food at suitable prices.

7. Some consideration might well be given to plans for the development of community food preservation centers including canning centers for schools and home and community freezer lockers.

8. The program for stimulating the home production of food for home use should receive continued recognition and encouragement.

9. Certain groups of the population need special consideration,
   (a) because they may be thought of as the most vulnerable ones and;
   (b) because good nutrition for them will have far-reaching effects on the entire population.

   1. School children--An accepted right of childhood is food, adequate for satisfactory growth and buoyant health. For millions of school children in Ohio the school lunch, properly supervised and administered, may well be one of the most effective methods of improving nutrition of the population. Accompanying the actual serving of well planned adequate meals at school (these meals might be other than lunches), there should be (a) physical examination of children to select those who may need special remedial measures; (b) education of the children in food selection; (c) education of parents and the community. Parents, teachers, physicians, and nurses should cooperate in this program.

   2. Expectant mothers and young children--Program to insure improved nutrition should be extended to include this group. The striking response to improvement in the diet of the pregnant woman as shown by well controlled studies, makes it evident that proper nutrition prevents or lessens the complications that occur at pregnancy. Some program should therefore be set up to insure adequate nutrition for expectant mothers through making adequate diets available for those on low income levels, and by instruction through clinics, either by dietitian or physician, for all pregnant women. Prenatal clinics should be amply provided with funds to carry out a program of education in food selection for all women, including financial assistance for those in need. This help and educational program should be extended at least through the periods of infancy and early childhood. Monthly well child conferences with the parents, the child, the physician, and the nurse in attendance are recommended.

   3. State institutions for state wards--Some plan should be evolved whereby food served the inmates of state institutions, remedial or penal, should be adequate. The employment of well-trained dietitians, capable of directing the selection, preparation and serving of food would result in lessening the food costs and also in improving the nutritional condition and thereby increasing the possibilities of rehabilitation of inmates.

4. Nutrition for industrial workers--A potent channel for nutrition education is found in industrial plants. Continued attention to provision for adequate satisfying food at desirable intervals should receive attention as well as plans for direct nutrition teaching to workers and their families.

B. Education

Educational programs should be far-reaching. Greatest success is to be expected "with sweeping programs using every method and channel to reach as many people as possible as many times and from as many angles as possible.

1. Nutrition teaching in schools. A nutrition education program should extend through the entire educational system; should be adapted to existing food consumption patterns and should be so planned and executed as to break down prejudices, existing bad food habits, ignorance and indifference. Carrying out of such a program would involve some plans in teacher training institutions for preparing elementary teachers to carry on the program and for the training of persons capable of planning and supervising such a program.

   Special attention should be given to training personnel adequate to the work of developing and supervising an integrated program which will include the best in educational procedures.

   Greater attention should be given in the school systems to integration and coherence of the program so that the different departments such as science, sociology, home economics and other subjects may supplement each other.

   Physicians may be considered as key persons in any program for improved dietary habits of the population. In private practice, through clinics and in connection with school, other institutions, and with public health work, physicians have an opportunity for influence in improving dietary practices which is unequalled for any other groups. Their training should include such work in nutrition as will make them aware of nutrition problems; and willing and able to advise their patients concerning food selection; or to have adequate consultant service concerning nutrition.

   Dental students should also receive in their training some nutrition education in regard to relation of diet to tooth structure and maintenance.

   Nurses may also be considered as key persons in a nutrition program and training for nurses should prepare them for participation in the program.

2. Contribution of other professional workers. Adult education in nutrition for rural families should continue under the fine leadership of the Extension Service, F.S.A. and other agencies. Methods to gain the cooperation and interest of men in the problem of good nutrition for the family might be helpful. Other aagencies for adult nutrition education may be developed as need arises and circumstances permit.

   For professional groups whose work touches the field of nutrition special courses may be advisable.

Indirect methods of teaching are often successful where direct methods fail. Personal or group conferences; community feeding projects; Victory Garden campaigns, serve as illustrations as to how indirect teaching may have an influence on improved food intakes.

3. Coordination of nutrition education. State, county and local nutrition committees should continue to help coordinate the nutrition activities of the various agencies and to endeavor as a group to discover nutrition problems and work toward their solution.

4. The effectiveness of the educational program should be evaluated to determine desirable changes in educational procedures.

III. Research

Research should be continued to determine food needs of the population; food values of foods and the conservation of these values in harvesting, marketing, handling, preservation and preparation for the table as well as on the topic of effective means of changing food habits.

XVI. RURAL EDUCATION

For purposes of this report, rural education can be defined as the sum total of desirable changes in rural people which in turn result in desirable readjustments in rural living.

This definition has many implications. Rural Education, as defined, is functional. Changes in conditions may occur as a result of external influences without involving any educational processes. Changes in people are the result of individual and group thinking, and consequent decisions which in turn result in democratic changes in conditions. Rural education may be formal or informal. It may have governmental support or it may be entirely independent of any governmental participation. The preceding theory of rural education forms the basis for the suggestions which follow.

A. Situations at the end of the war.

I. Adults-- Situations at the end of the war will require educational programs that will better prepare individuals,

1. To assume maximum responsibility as individuals.
2. To contribute as members of families to the best home life.
3. To function in an integrated way into the groups of the community and into society in general.

The post war period will require an educational program that gives adequate attention to needs such as,

1. The necessity for economic adjustment.
2. Family adjustments with changing labor requirements and with the availability of technical equipment.
3. Increasing responsibility of individuals to groups, and increasing responsibility of groups to individuals.
4. The problems of the people on family sized farms.

5. The older age group who will be assuming less responsibility for work and management.

6. Part-time farming will be of greater importance in many communities.

7. Men and women returning from the service and from industry will need to be adjusted into farming and farm life and into related occupations.

8. Increasing group cooperation in the use of facilities and services that are essential.

II. Older Rural Youth--The post-war situation of older youth in rural life will be greatly affected by industrial and commercial employment. It is likely, however, that employment opportunities will be less favorable than those existing at the peak of wartime production. We can expect, therefore, that there will be three general sources from which this older youth group will come:

1. Those who have remained on the farm because of physical disability or service to agricultural food production.

2. Those who have returned to the farm from industrial and business employment.

3. Those returning to the farm from military service.

In addition there will be the oncoming group of students from high school who would normally enter this older youth group and whose problems are not appreciably different from the members of group one.

The preceding statements point the way toward certain definite specific situations.

1. There will be an unusual need for over-all social orientation. Three groups of youth with widely different experiences will need to learn to live together.

2. An unusual amount of occupational maladjustment will exist.

3. There will be widely varying economic situations and widely varying degrees of economic responsibility among older rural youth. In addition, there

will be the problem of adjusting to a peace time economy.

4. An unusual degree of adjustment in family life will be necessary. Families will need to learn to live together again. Marriages have been deferred or made hastily. Older girls will be relieved from the unusual pressure of family labor on the farm. The problems of the establishment of homes will be more complex.

5. There will be wider opportunities for community service.

6. There should be wider opportunities for employment in services directly related to farming such as the cooperative programs, rural servicing of home and farm conveniences.

7. Older rural youth should be more receptive to education, and educational services to this group should be extended.

8. With the recession from wartime authority there will be greater need and wider opportunities for rural youth leadership.

III. Rural Children

The post-war educational program for rural children will be affected by the following educational concepts and knowledges:

1. The lack of an adequate health program based on the belief that the physical, emotional and intellectual development of children is significant.
2. The need for an understanding of social and recreational problems that affect the lives of rural young people.
3. The increasing importance of training children to assume responsibility in the home, community and school.
4. A functioning program which provides adequate personal and vocational counseling in the school and home.

5. A greater need for an understanding of conserving such natural resources as soil, water, timber, and wildlife.
6. An adequate responsibility for safety in the home, on the farm and highways.

B. The program for the Post-war Period.

The educational program will be most effective when it is determined by the representatives of the people within the community for whom it is intended.

Community Council--

The responsibility for the (1) planning, (2) execution, and (3) evaluation of the program for the community should be vested in a Community Council. Such a council should consist of representatives of the various interests, organizations, and agencies which are present in the community.

In the development and in the conduct of the program the Community Council should have available the assistance of representatives of organizations and agencies from the community, county, or state when needed and desired.

County Councils - State Council

The programs developed by community councils can be greatly facilitated through cooperation from county and state councils. These councils should consist of representatives from various interests, organizations and agencies.

Steps to be Considered in Developing the Program.

1. Study the situation to determine the needs and problems of the people.
2. Select problems of importance to each age group which are to be given a place in the program.
3. Decide on the resources that can be and should be used to solve these problems.
4. Plan for the use of these resources to get the solutions of the problems.
5. Secure the participation of each and every individual in some phase of the program.

6. Study the results of such a program at stated times to determine its values.

7. Revise the program in the light of study, of experience, and of additional information.

I. A Program for Adults

The needs and interests of the individuals, the families and the groups of the community, as well as of the county, state, and national and of the world should be given consideration in planning the program.

1. The study of the needs and problems of the farm and home as a unit, so that the program may be planned to deal with the basic factors of concern to the farm family.
2. Plans for the conservation and effective use of resources - physical, technological and human.
3. The recognition of the interdependence of agriculture, industry and the whole of society.
4. The use of efficient methods in the business of farming.
5. The use of efficient methods in the farm homes.
6. The community interests and needs which are of concern to the families of the community.

II. A Program for Older Rural Youth.

In general, older rural youth programs should involve a maximum of participation in planning and conducting. They should have as a goal, not only a return to normal life but an improvement on pre-war conditions.

1. A wide range of economic, social, recreational and civic activities.
2. Information necessary to occupational adjustment.
3. Community activities which involve family participation.
4. Training to fit older rural youth for rural service occupations.

5. Programs for older rural youth meetings which will provide for discussions of home and family problems.

6. Readings and discoussions which will give a maximum understanding of changes on the world in which we live.

7. Adult recognition of the place of older rural youth in rural society.

III. A Program for Rural Young People.

A post-war program for the education of rural young people should be organized to promote and develop rural education as a community responsibility with the following:

1. The educational program should provide a complete plan for an adequate health and nutritional program.

2. An enriched curriculum that makes provisions for the personal, vocational and cultural needs of individuals.

3. Provide a functional program that will train young people to assume responsibility in the home, school and community.

4. Stimulate a program that will bring about the desire to cooperate in a conservation program of natural resources.

5. Train young people to intelligently discuss and understand economic and social problems of interest to the community, state and nation.

Difficulties involved

1. Many problems are involved in the various situations. People do not learn to live together by merely talking about it. Programs of participation require new opportunities and careful planning.

2. The problems of occupational adjustment will be difficult. Many occupations will change and patterns for occupational adjustment are intangible.

3. The scientific information and trained personnel necessary to deal with problems of intellectual and emotional maladjustment are not available.

4. Many rural people and rural educators are not aware of older youth problems, and if they are aware of them they do not accept any responsibility for their solution.

5. Many programs will be organized to exploit older rural youth rather than to educate them.

6. There is a lack of trained persons and facilities for an adequate health program.

XVII SURPLUS MILITARY SUPPLIES AND EQUIPMENT

It would seem desirable that plans should be developed which will provide for the productive use of the surplus military supplies and equipment which will exist at the end of the war. As indicated at various points in this report, if agricultural and rural development is going to move forward during the post-war period there will be a need for large amounts of equipment and supplies.

In disposing of this equipment it is recommended that first option on its procurement should be given to the Federal Government, second to the states, and third to local units of government. Any remainder to be made available for individual farm purchase. That portion of the supply which is to be made available for individual farm purchase could best be distributed through regularly established dealers associated with the type of equipment involved. The equipment should be sold in lots of a size which will enable the average sized retailer serving the farm trade to bid.

It might be said that turning these supplies into civilian use would limit the opportunities for industrial employment. It is believed, however, that the farm market has been limited in the past by the money with which to buy, rather than by being overstocked with goods.

Heavy equipment such as trucks, scrapers, and bulldozers could best be used for public work particularly road work, the construction of recreation areas, and land improvement. Rural townships would welcome the opportunity to secure fire fighting equipment. State and Federal forestry agencies have stated elsewhere in this report the need for 50 truck tanks, and power pump combinations, 60 tractor plows, 120 radio installations, 96 lookout towers, 457 miles of telephone line, 18 sets of buildings and 117 miles of road. This represents the type of use that could well be made of surplus equipment.

Farm improvement would absorb tremendous quantities of lumber, fencing, steel posts, and other smaller items of equipment.

APPENDIX - A

POST-WAR PROBLEMS AND PROGRAMS

Forestry

At the time of the settlement of Marietta, 1788, the Ohio territory had nearly 95 per cent of its calculated 26,318,080 acres of land in forest. The remainder was covered with wet prairie vegetation in poorly drained places which remained marshy until late summer or throughout the year, and with dry prairie vegetation on soils so well drained that tree seedlings could not survive the summer droughts. In the period since settlement began, only 155 years, forested land has been reduced to approximately 3,707,958 acres according to the latest reliable estimate by the Ohio Foresty Survey. This present acreage represents but about 14.8 per cent of the original timberland, an alarmingly low area devoted to production of Ohio's wood supply. More alarming still is the present low volume of usable material in these woodlands in contrast to that contained in the original or virgin stands on the same areas.

The topography of Ohio has had a marked effect not only upon the type of forest found in different regions, but also upon the ease with which the land could be cleared for farming. Much of the level land which is now highly productive did not meet the needs of the early settler. The soil was heavy and so poorly drained that crops, which could not be planted until late in the spring, were constantly threatened by any prolonged period of wet weather.

It was easier to clear rolling or hilly land which drained readily and, as long as the top soil remained, produced excellent crops. Evidence of the high fertility of virgin soils of hill farms is still to be seen in the fine old homes built 75 to 100 years ago. That water erosion soon removed the top soil, rendering the field unproductive, did not worry the early farmer; it was too easy to clear a piece of "new ground" and use the poorer field for pasture. The situation began to assume serious proportions however, when no more new ground was available and the farmer was compelled to plow his meadows and subject the remaining fertility to further depletion.

The result was inevitable. In the hilly, unglaciated section of eastern Ohio, extending from central Columbiana County along the Ohio River to Adams County and extending inland from one to three counties, it is now possible to find extensive areas where whole farms have been abandoned to revert to forest by the slow processes of nature. This land, estimated to be about 1,500,000 acres in area, will still produce fair timber, but the problems of ownership, protection, reforestation, and management are not easy to solve.

In the hilly region, the timber on all but the steeper slopes has been cleared to a large extent, but some of the land has again reverted to stands of second growth poles of promising composition and vigor. Such is the history of much of the land now included within the boundaries of National and State Forest purchase areas.

The timber in the level country fared much better. Land, once cleared, retained its fertility for a long period of time, thus removing the need for new ground and the evils incident thereto. The result is that most of the remaining merchantable timber is to be found in farm woods of the level country, while the greatest need for a crop of trees is on abused hill land where nothing else can be grown with safety.

Current Importance of Ohio's Forests

As a great industrial and agricultural State, we are inclined to overlook the important role of forests and forest products in our economy. Forests still occupy 14 per cent of the land area of the state, and in certain southeastern counties as high as 59 per cent.

In an extensive survey of wood-using industries made in 1912, it was found that the value of the products of 1600 factories using lumber as raw material amounted to $156,000,000. Over 63,000 wage earners were dependent upon these industries. Today it is estimated that the value of wood products would reach $289,000,000, and the number employed would be increased to 63,500 full-time

employees with 33,000 part-time employees. The 1941 timber production was estimated to be 270,000,000 board feet.

According to estimates of lumber production for 1942, Ohio ranked 11th in the production of hardwoods, being exceeded in the central states by West Virginia, Tennessee, and Kentucky. Very little soft wood is found in Ohio, except limited quantities of yellow pine in the southeast and occasional stands of hemlock.

It should be borne in mind that much of the so-called forest land in Ohio has been cut over or culled, thus greatly depleting the growing stock which should be carried at all times if a maximum yield is to be obtained. It is conservatively estimated that with good management, Ohio's annual forest crop could be increased from 270,000,000 board feet to 550,000,000 board feet. If abandoned farm land and other idle land could be brought into timber production the opportunity for increased employment would be greatly enhanced. This total potential production might result in steady employment for 150,000 workers and temporary employment for an additional 50,000 persons.

Condition and Use of Ohio's Forest Land

At least 95 per cent of Ohio's timber is growing on privately-owned land, the remaining five per cent is under federal, state, community, or quasi-public ownership. About 2,404,800 acres of forest are owned by farmers. Mining companies own some 453,000 acres of woods and a small portion of the state's total forest is owned by sawmill operators. State forests amount to 107,623 acres, state game preserves 11,300 acres, and other state agencies own over 3,000 acres of woods. The United States Forest Service administers 76,768 acres located within the Wayne Purchase Unit of 1,177,000 acres. There are 26 community forests having a total forest area of 19,276 acres. Quasi-public lands such as holdings of the Muskingum Watershed Conservancy District, contains 12,410 acres of woodland, and plans are made to reforest 22,400 acres of land owned by these agencies.

There are 1,500,000 acres of abandoned farm land and other idle land which will gradually revert to forest.

As a result of past treatment, Ohio's woodlands have undergone many changes in composition and density. Today, as a result of livestock grazing, cutting, and fire, our remaining 3,707,958 acres of woodlands are a patch work of old and young stands, and open, park-like groves.

Ohio's existing forests can readily be divided into five groups, based on the number and size of trees in individual woodlands. These groups have been classified as productive saw timber pole stands, open-park woods, and seedling and sapling stands. The per cent of the total area in each class is shown in the following table:

Poles - 59.9%

Productive saw timber - 26.6%

Open park - 7.4%

Seedlings and saplings - 6.1%

Distribution of Woodland Acreage by Forest Type Areas - Acres

Type Area	Poles	Productive Saw Timber	Open Park	Seedlings & Saplings	Total
Beech-Maple	899,457	530,357	175,266	23,781	1,628,861
Mixed Oak	877,808	263,179	20,265	198,847	1,360,099
Oak-Hickory	345,613	124,820	47,080	414	517,927
Swamp Forest	97,921	68,284	31,367	3,499	201,071
Total	2,220,799	986,640	273,978	226,541	3,707,958

There are four principal forest types in Ohio: (1) Beech-Maple, which extends across the State from northeast to southwest; (2) the Mixed Oak Type, which is most extensive in eastern and southeastern Ohio; (3) the Oak-Hickory Type which occurs in the northern and central portions; and (4) the Swamp Forest which is the most extensive in the northwestern part. Over 50 per cent of the productive saw timber is in the Beech-Maple Type.

The per cent of volume by species of the remaining saw timber is shown in the following table:

Red oak	-	20.6%
White oak	-	18.7%
Hard maple	-	13.3%
Beech	-	11.9%
Elm	-	8.1%
White ash	-	4.7%
Hickory	-	4.3%
Tulip poplar	-	4.3%
Soft maple	-	4.2%
Basswood	-	1.8%
Sycamore	-	1.3%
Black walnut	-	1.2%
Black gum	-	1.2%
All others	-	3.4%

Of the total volume of 9,357,958,000 board feet, the greater part will be found in farm woodlands. Most of the large areas of forest in southern Ohio which are not parts of farms have been cut or culled at least once, and are now composed of young woods in the sapling or pole stage. Neither the State nor National Forests contain much merchantable timber, and will remain relatively unproductive for another 20 to 50 years. When purchased these areas were either denuded or covered with small poles. The timber which is now being harvested consists of trees left from previous logging operations which, due to the present favorable market, can now be cut at a profit.

Of the 2 billion board feet of lumber used in Ohio industries, less than 15 per cent is sawn within the State.

From available data it is estimated that the total annual saw timber growth on the 3,707,958 acres of forest is approximately 217,000,000 board feet. This is about 30 per cent of the estimated total annual drain of saw timber and fence posts, fuelwood, mine timbers, pulpwood, veneer, etc. It is estimated that for all wood grown and consumed drain exceeds growth by about two to one.

Because both growth and drain are at a low level due to depleted growing stock or forest capital, they bear little relation to the potentialities of Ohio's forest land if they could be brought back to full productivity. It is esti ated that the

present forested area, if properly managed, could produce 555,000,000 board feet annually. The possibility of increasing the total forest acreage by bringing into forest production the 1,500,000 acres of abandoned and idle land indicates a method of further reducing the annual timber deficit. This is a major objective so far as Ohio forestry is concerned.

It is difficult to estimate the amount of timber lost by fire and grazing. Because few fires kill large timber, the loss is potential rather than actual. Young trees are killed and without young reproduction, no mature crop may be harvested.

Forests and Farm Income

No discussion of the place of forests in the state economy would be complete without some recognition of their significant role in the agricultural picture. Wood, in Ohio, is principally a farm crop. Probably 90 per cent of the timber products cut in the State are taken from farmwoods. It is not generally recognized that the total sale value of the timber in Ohio's farmwoods in 1940 compared favorably with the total value of all domestic animals. (Computed value of standing timber at pre-war values, $123,500,000. Total value domestic animals, 1940 Census, $147,000,000 Considering only the sale of the standing trees (stumpage) annually used for lumber, the return to the farmer is in excess of 12 million dollars. In addition, a very considerable return is realized through his contribution to the further processing of the lumber, cutting the trees, hauling them to the sawmill, and often actually doing the sawing. The farmwoods also play a very important role in farm operation and maintenance. Approximately 1,800,000 cords of firewood, and over 9,000,000 fence posts are cut and used on the farms of the State each year. In addition, the average farm cut approximately 1,000 board feet of timber which was custom sawn at nearby mills for home use. If purchased in the open market these products would have cost the farmer a minimum of 15 million dollars.

Aside from the forest under public ownership, not over one-third of the timber lands of the State are managed with any regard for future crops. Due to past abuses only 72 per cent of the forests are now capable of yielding reasonably good returns. About 18 per cent can yield such returns now and an additional 10 per cent are highly productive. The proper management of the 28 per cent of the forests which now contain the bulk of the timber of commercial size is of vital importance to the industries dependent upon Ohio timber.

It is not likely that war markets will greatly effect woodland management. It will tend to increase production and may drain off such species as white oak, white ash, tulip poplar, and walnut at more than normal rates, but the percentage of over-cut woods and well cut woods is not likely to change as a result of war markets.

Forest Management Problems. Listed briefly the major forest management problems are as follows: (1) Protect the stands from fire and the grazing of livestock; (2) prevent over-cutting of existing stands; (3) reforest idle and abandoned land, (4) remove cull trees from existing forests.

Watershed Protection

In the unglaciated region of southeastern Ohio the forests exert a major influence upon soil stability and a moderate influence upon water flow. There is almost no soil erosion under a forest cover, even though the slope of the ground sometimes reaches

25 degrees. On steep forested slopes there is runoff following periods of heavy rainfall, but water loss is spread over a longer interval than is required for a corresponding loss from bare or grass land.

On level and gently rolling land the forest soils absorb most of the rainfall which is later released into streams which benefit from the stabilizing effect of the forest. The importance of the absorbtion of rainfall cannot be over emphasized in Ohio, as many industrial sections find it impossible to undertake further expansion, due to the restricted ground water supply. Throughout many regions farm springs and wells which are depended upon to supply livestock, go dry after a few weeks of drought.

With only 14 per cent of Ohio in forest, it is obvious that on the whole, watersheds are not greatly effected by this type of cover. The manner in which the land is farmed, the amound of exposed soil, grass land, etc., probably has a dominating effect upon the absorbtion of rainfall. However, in some hilly counties where the forest cover varies from 30 to 59 per cent the benefits are very pronounced.

Grazing of farm woods greatly reduces the absorbtive capacity of the soil as a result of the loss of undergrowth which holds the leaves from blowing about, and also because of the packing of the soil by the hoofs of the animals.

Forest and field fires also lay the soil bare for considerable periods during which absorbtion is reduced and runoff greatly accelerated.

Watershed problems. As indicated above, the principal problems in maintaining watershed protection values of forest land center around the practice of grazing farm woodlands and the threat of fires in the more heavily wooded regions.

Forest Recreation

Only a very limited use is made of the farm woods for recreational purposes. Some small game is to be found and occasionally a tract of timber located near a city or village will be used as a picnic grounds.

On the other hand, publicly-owned forests are used extensively for recreation. Picnicking and camping are encouraged on all the State and National Forests, while lake and stream fishing, swimming and boating is enjoyed on several forests. It is estimated that the number of people who visit the State and National Forests for picnicking would total well over one million annually.

In 1943 there was an open season on deer in southeastern Ohio, deer having been introduced on the Roosevelt Game Preserve and Shawnee State Forest in 1920. About 164 bucks were killed. Deer hunting may be expected to increase as the herd grows and spreads to new localities.

Recreation Problems. Even with existing forest parks used to capacity and with constant pressure from chambers of commerce and others who would enjoy financial advantages arising from tourist trade, there has been sufficient resistance, lethargy, or jealousy to prevent the expansion of these facilities on the part of the states. Ohio is fortunate in having numerous sites ideal for the development for forest recreation. It has been demonstrated that many types of recreational facilities are self-supporting, but efforts to obtain funds for land purchase have met with little encouragement.

A land purchase program is needed which should be based upon the availability of appropriate sites.

A set of standards for development should be established. Adequate funds for development should be appropriated.

National Defense

Although the Government owns numerous defense plants in Ohio, the amount of forest land involved is exceedingly small.

Likewise the amount of forest land likely to have strategic value in national defense is almost negligible. Very little timberland adjoins the southern shore of Lake Eire.

There are no special areas within the State which are of special importance so far as the production of vital materials essential to national defense is concerne

Problems of multiple use of forest land. The most apparent problem of this nature arises from the grazing of farm woodlands. Severe and sustained grazing will result in the death of a hardwood forest. The practice is not only fatal to the trees, but it is also harmful to animals due to the low food value of forest brouse.

It has already been pointed out that grazed woodlands compare unfavorably with ungrazed forest so far as the absorbtion of rainfall is concerned.

Interrelationships in Land Use

The close relationship between forest and farm land is frequently apparent in Ohio. The farm woods is a source of fuel, posts, poles, and lumber for farm construction. In the beechmaple region many maple trees are tapped for the productio of maple syrup and, coming as it does in the late winter, this furnishes the farmer with an additional source of income.

In the hilly region where available farm land is often limited, it is often possible for residents to work part time on their farms and part time in the woods. This is especially true on farms adjoining national and state forests where much of the woods work is done in the winter. As the public forests increase in area and timber thereon reaches merchantable size, the opportunity to supplement the income of local residents by part time employment will be an important feature in t the economy of the region.

Direction of Needed Action

An action program for Ohio can be broken down into seven lines of activity as follows:

1. Accomplish the reforestation of the idle and abandoned land not adapted to a higher use.
2. As a part of No.1 expand the publicly-owned forests by purchasing a minimum of 40,000 acres per year.
3. Maintain an adequate forest fire control organization in all regions where fire is a hazard.
4. Make trained foresters available to assist private timber owners in management, utilization and marketing problems.
5. Intensify forest research.
6. Evaluate forest land as an investment of public and private funds.
7. Investigate legislative needs to effect full productivity of forest land.

In still broader terms idle land should be made productive and a higher degree of protection should be given to, and a more intelligent use made of all existing forests.

The reforesting of idle or abandoned land presents many problems which will be difficult to solve. Where a large per cent of the land in a region is abandoned, a state forest purchase area may be established which will have the effect of zoning the purchase area against farming and dedicating the land to forest production. The farmers whose land would be purchased would move to other, more prosperous communities. Once in public ownership the open land could be planted to trees at public expense with the assurance that the final crop would be properly handled.

The difficulty lies in the fact that most of the idle land which should be reforested is not massed in units suitable for public forest purchase areas, but is comprised of abandoned or idle fields which are parts of going farms. The farmers are frequently of the low income group who are not in position to purchase trees or hire the help required to plant them. Some landowners could be persuaded to plant trees if the planting stock were furnished free, or at low cost, or if his taxes were removed from the land and crop, or if the work were subsidized by state or federal agencies. Most of these plans have been tried, but without great success, as the owner has been free to do with the trees as he might see fit. Trees furnished without cost by the CCC have been cut for Christmas trees. There is nothing to prevent an owner from selling hardwood trees from a plantation before they had reached maturity. Without some direct control over the handling of privately owned timber it is doubtful whether the State should go very far with a reforestation program based upon a form of subsidy.

Education seems to offer the most promising returns, especially in dealing with the management of existing timber stands. Many owners are eager to handle their woods in accordance with good forestry practices and welcome the forester who is available to help them. This is the best approach to the problems of grazing and over-cutting.

The first step would be to complete the system of district foresters by adding three new appointees to the two already on duty. These men should have enough assistants to handle calls for assistance from land owners who contemplate a timber sale or a reforestation project. The district foresters would handle the forest fire control work within their districts and would survey the needs for state forests and purchase and administer such forests as were acquired.

PLANS FOR FOREST LAND

Capital Improvements

1. Protection Against Fire

(a) Hazard reduction. The fuel consumed in forest fires in Ohio is largely leaves, small limbs and grass. Where this fuel is adjacent to railroads, highways or dwellings, it is possible for a fire to start, but the removal of such fuel would involve more investment than the probable loss would justify. Furthermore it would be in the nature of an annual maintenance item rather than a capital improvement.

(b) Improvements. At the present time 1,300,000 acres of forest are protected from fire by the use of steel fire towers, while 2,700,000 acres are patrolled by six planes. A seventh may be added in the spring of 1944.

Plane patrol is being used experimentally as a quick means of observation and because steel lookout towers have not been available. Whether planes will be used after the war depends upon the relative costs and efficiency of the two kinds of observation.

To be on the safe side it is assumed that towers will be used to cover the area now patrolled by planes. Fifty towers will be required to do the job.

One hundred fifty miles of telephone line will be required to connect these towers with commercial lines.

(c) Fire equipment. To control fire in grass lands, abandoned farm lands, etc., a tractor with plow attached, trailer for transporting the unit, would be needed at sixty locations. If a machine similar to a jeep, equipped with a 100-gallon tank and a high pressure pump were available, fifty units could also be used to advantage.

2. Timber Development and Watershed Protection.

(a) Planting. The planting work should be divided into two classes; that which should be done on the public forests which have been or should be purchased, and the privately owned land that will not reforest itself naturally within a reasonable length of time. The first class is legitimate work, if the land is purchased; the latter is questionable unless satisfactory public control is exercised over all plantings established with public funds.

The planting job on public land would amount to 250,000 acres, and the planting on private land would be about 400,000 acres.

Trees for this program could be grown for $8.00 per thousand and planting would cost $12.00 per thousand. Eight hundred trees per acre would be adequate, making a cost of $16.00 per acre.

(b) Stand Improvement. Stand improvement should be limited to an average of two man-days per acre. On publicly owned land a total of 1,000,000 man-days might be used in the next ten years.

As in the case of planting, no stand improvement should be done on privately owned timber at public expense unless provision is made for the protection of this investment. If such provision is made, owners of 1,000,000 acres of timber might avail themselves of the opportunity. Unless carefully supervised, stand improvement work is likely to be of little real use.

3. Forest - range Development.

There is no forest range as such in Ohio.

4. Insect, Disease, and Rodent Control.

There is no need for an extensive program of insect, disease, or rodent control in Ohio. Possibly the Japanese beetle, sawfly, and tip-moth may prove a serious pest on forest trees, and control measures will be requested, but it is not such at present.

5. Upstream Flood Control Improvements.

No doubt there are many places in the headwaters of the Muskingum, Miami, Mahoning, Scioto, and other rivers where stream bank planting and measures of an engineering character would be helpful in preventing the silting of reservoirs, but no reliable information is available on which to base an estimate of the magnitude or importance of such work.

6. Forest Recreational Development.

Any large publicly owned forest which is already established or may be created in the future will contain terrain suitable for forest park development. The construction of small lakes from 50 to 500 acres in area, and the development of waterfront facilities, together with the building of vacation cabins, lodges,

restaurants, museums, picnic shelters, roads, trails, parking areas, etc., represents a volume of work which runs into fantastic figures. The people of Ohio are eager for this type of outdoor recreation as evidenced by the long waiting list of families wishing to rent a vacation cabin at Lake Hope in the Zaleski Forest Park in Vinton County. Plans are being prepared for such development on existing public forests and additional plans will be made as forest acquisition progresses.

7. General Administration

There follows a list of jobs which could be undertaken on land already owned or which could be purchased with available funds.

State Forests.

1. Construct administration headquarters for 5 district foresters.
2. Construct 5 guard stations.
3. Build 80 houses for laborers.
4. Construct 100 miles of fence.
5. Place an additional 30 acres of forest nursery under irrigation.
6. Mark 200 miles of forest boundary.
7. Construct one garage for general repair.
8. Remodel house and barn for ranger station.

The acquisition of a substantial acreage of new state forests would require in addition to the administrative improvements listed above, the construction of roads and trails at about the rate of one mile each of road and trail for every 1,000 acres of land acquired.

National Forests.

1. A set of administrative improvements for one district ranger's headquarters.
2. Construction of one guard station.
3. Construction of 21 miles of forest development roads and improvement of 12 miles of road already constructed, consisting of surface stabilization.
4. Construction and erection of several hundred directional and informational signs.

As acquisition of land within the Purchase Unit boundaries progresses, there will be need for the following additional improvements:

1. One district ranger's headquarters.
2. 56 miles of additional truck trails.

There is need for the construction of field headquarters buildings and improvements to facilitate research in several phases of forestry on a proposed experimental area of some four thousand acres on the Wayne National Forest Purchase Units. Buildings and improvements should consist of dwellings for superintendent and research men, office, laboratory and work building, water and sanitation system, telephone system, lighting system and development of grounds, approaches, roads, trails, etc.

Related Measures Essential to Capital Improvements.

1. Land acquisition. Although there are no accurate figures available relative to the amount of land in Ohio which should be purchased as public forests, the combination of various estimates would indicate an area of 1,000,000 acres. There are at least 28 counties which contain considerable acreage of land which may never be reclaimed for agricultural uses and should be purchased and reforested by the state and federal governments.

The cost of this land would be relatively low. Land already purchased as part of the Wayne National Forest Purchase Area has cost an averaged of $6.23, while costs for state forests vary from $5.00 to $8.00 per acre.

2. Cooperative fire protection services. The cost of adequate forest and grass fire control in Ohio will be approximately $120,000.00 per year. At the present time the State appropriates $80,000 per year, and under the Clarke-McNary program and the war emergency the government is furnishing $28,000 in addition to federal expenditures within the Wayne Purchase Unit protection area.

On lands of high public investment such as national and state forests, more intensive fire protection measures may be advisable. Costs for such protection may run as high as 5 cents per acre per year.

3. Research. It would be highly desirable to acquire suitable-sized tracts of forest land within the cornbelt representing different stand condition classes in the major forest types. It is designed that these proposed areas be used to determine and to demonstrate the most effective methods of management.

In the hill section of eastern and southeastern and southwestern Ohio, it is imperative to the reestablishment of the State's potential wood resources to initiate the following research: Forest Management - (1) Experiments to develop methods and standards of work for improvement cuttings and intermediate harvest cuttings in culled-over second-growth forests. (2) harvest cutting methods in mature forests, (3) determination of sites suitable for hardwood planting, (4) plantation release and underplanting as means of improving growth, stocking and composition in understocked stands; Forest Economics - To integrate existing forest survey data and that to be obtained by work planned by the State of Ohio with the survey results obtaines in other states so that valid comparisons may be made of the forest conditions between Ohio and other states; Forest Influences - Research to demonstrate the influence of various kinds and conditions of forest cover on run- off retardation for flood control and water conservation.

4. Surveys and inventories. The forest resources survey which has already been made in 38 counties should be extended to include the remaining 50 counties.

Inventories should be made of the timber on all the existing publicly-owned forests, together with sufficient growth studies to construct accurate management plans.

5. Maintenance of Improvements. Experienced gained in the CCC program points to the need for maintenance of all forest improvements. It is important therefore to make only those improvements which will produce revenue sufficient to cover the cost of maintenance, or to make certain that benefits from protection or increased usefulness of the forest will amply cover the maintenance as well as the first cost of the improvements.

Other Measures Needed in a Program of Forest Conservation

In Ohio there is a need for educational and technical assistance to private owners. Two men are employed on this type of work at present, but at least eight more are needed to meet existing demands for this type of service.

Some form of subsidy which would stimulate the reforestation of abandoned land would be a step in the direction of better land use. In such a program the public investment should be protected.

USDA
Post War Plans
(Form 1-FL-R9 Modification
For Report of 2/29/44)

CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Culture (Plantation Care) State Ohio

	* Pr.	Subclasses of Improvement				Totals
1. Amounts (Acres, miles, etc.)	1	2,575 Ac.				
(a) On Gov't Land, Dept. of Agriculture	2	850 Ac.				
(b) On Government Land - Other Federal						
(c) On Public Land - State and Local	1 2					
(d) On Private Land - Farm Woodlands						
(e) On Private Land - Other						
(f) Totals						
2. Ratio of Labor Cost to Total Cost (Estimated Percent)						
(a) On Federal Gov't Land		90%				
(b) On State & Local Gov't Land						
(c) On Private Lands						
(d) On All Land						
3. Employment (man years)						
(a) On Government Land - Dept. of Agriculture	1 2	17 6				
(b) On Government Land - Other Federal						
(c) On Public Land - State and Local	1 2					
(d) On Private Lands - Woodlands						
(e) On Private Land - Other						
(f) Total						

* Priority
#1 - Necessary work to continue during prosperity as well as depression.
#2 - Desirable work reserved for unemployment relief programs.

USDA
Post War Plans
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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Timber stand improvement State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1 2	26,000			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1 2	50,000			
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other		500,000			
(f) Totals		576,000			
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		80%			
(b) On State & Local Gov't Land		80%			
(c) On Private Lands		80%			
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1 2	600			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1 2	400			
(d) On Private Lands - Farm Woodlands					
(e) On Private Land - Other		4000			
(f) Total		41,000			

* Priority
#1 - Necessary work to continue during prosperity as well as depression.
#2 - Desirable work reserved for unemployment relief programs.

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Tree Planting State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1	20,650			
	2	18,550			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1	50,000			
	2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other		100,000			
(f) Totals		189,200			
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		80%			
(b) On State & Local Gov't Land		90%			
(c) On Private Lands		90%			
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1	217			
	2	195			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1	200			
	2				
(d) On Private Lands - Farm Woodlands		400			
(e) On Private Land - Other					
(f) Total		1012			

* Priority
#1 - Necessary work to continue during prosperity as well as depression.
#2 - Desirable work reserved for unemployment relief programs.

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Truck, tank, power pump combinations State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1				
	2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Land - Farm Woodlands		50			
(e) On Private Land - Other					
(f) Totals					
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land					
(b) On State & Local Gov't Land					
(c) On Private Lands		0			
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1				
	2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Lands - Farm Woodlands		0			
(e) On Private Land - Other					
(f) Total					

* Priority
#1 - Necessary work to continue during prosperity as well as depression.
#2 - Desirable work reserved for unemployment relief programs.

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Tractor plow combinations State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land Dept. of Agriculture	1 2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1 2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other		60			
(f) Totals					
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land					
(b) On State & Local Gov't Land					
(c) On Private Lands		0%			
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1 2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1 2				
(d) On Private Lands - Farm Woodlands		0			
(e) On Private Land - Other					
(f) Total					

* Priority
#1 - Necessary work to continue during prosperity as well as depression.
#2 - Desirable work reserved for unemployment relief programs.

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Hazard Reduction State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1				
	2	500 Ac.			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other					
(f) Totals		500 Ac.			
2. Ratio of Labor Cost to Total Cost (Estimated Percent					
(a) On Federal Gov't Land		90%			
(b) On State & Local Gov't Land					
(c) On Private Lands					
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1				
	2	4			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Lands - Farm Woodlands					
(e) On Private Land - Other					
(f) Total					

* Priorigy
#1 - Necessary work to continue during prosperity as well as depression.
#2 - Desirable work reserved for unemployment relief programs.

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Fire Surveys State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1				
	2	2 proj.			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Others					
(f) Totals					
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		85%			
(b) On State & Local Gov't Land					
(c) On Private Lands					
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1	4 1/2			
	2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Lands - Farm Woodlands					
(e) On Private Land - Other					
(f) Total					

* Priority
#1 - Necessary work to continue during prosperity as well as depression.
#2 - Desirable work reserved for unemployment relief programs.

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CAPITAL IMPROVEMENT FOR FOREST LAND

Class of Improvement Radio Installations State Ohio

	* Pr.	Subclasses of Improvement				Totals
1. Amounts (Acres, miles, etc.)						
(a) On Gov't Land, Dept. of Agriculture	1	40				
	2					
(b) On Government Land - Other Federal						
(c) On Public Land - State and Local	1					
	2	30				
(d) On Private Land - Farm Woodlands						
(e) On Private Land - Other		50				
(f) Totals		120				
2. Ratio of Labor Cost to Total Cost (Estimated Percent)						
(a) On Federal Gov't Land		10%				
(b) On State & Local Gov't Land		10%				
(c) On Private Lands		10%				
(d) On All Land		10%				
3. Employment (man years)						
(a) On Government Land - Dept. of Agriculture	1	1/2				
	2					
(b) On Government Land - Other Federal						
(c) On Public Land - State and Local	1	1/2				
	2					
(d) On Private Lands - Farm Woodlands		1/2				
(e) On Private Land - Other						
(f) Total		1 1/2				

* Priority
#1 - Necessary work to continue during prosperity as well as depression.
#2 - Desirable work reserved for unemployment relief programs.

USDA
Post War Plans
(Form 1-FL-R9 Modification

CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Lookout Tower Construction State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1 2	46			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1 2				
(d) On Private Land - Farm Woodlands		50			
(e) On Private Land - Other					
(f) Totals		96			
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		30%			
(b) On State & Local Gov't Land					
(c) On Private Lands		50%			
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. Of Agriculture	1 2	14			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1 2				
(d) On Private Lands - Farm Woodlands		25			
(e) On Private Land -Other					
(f) Total		39			

* Priority
#1 - Necessary work to continue during prosperity as well as depression.
#2 - Desirable work reserved for unemployment relief programs.

USDA
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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Telephone lines State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1	157 mi.			
	2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1	150			
	2				
(d) On Private Land - Farm Woodlands		150			
(e) On Private Land - Other					
(f) Totals		457			
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		33%			
(b) On State & Local Gov't Land		75%			
(c) On Private Lands		75%			
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1	18			
	2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1	5			
	2				
(d) On Private Lands - Farm Woodlands		5			
(e) On Private Lands - Other					
(f) Total		28			

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#2 - Desirable work reserved for unemployment relief programs.

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Timber Development & Watershed Protection State Ohio

	* Pr.	Subclasses of Improvement (a)	(b)		Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1	2,000A	5,000 A		7,000 A
	2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1		500 A		500 A
	2				
(d) On Private Land Farm Woodlands			500 A		500 A
(e) On Private Land - Other					
(f) Totals					8,000 A
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		75%	75%		
(b) On State & Local Gov't Land			75%		
(c) On Private Lands			75%		
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1	8	20		28
	2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1		2		2
	2				
(d) On Private Lands - Farm Woodlands			2		2
(e) On Private Land - Other					
(f) Total		8	24		32

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement 5. Upstream Flood Control Improvements State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, Miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1				
	2	3,000 A			3,000 A
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other					
(f) Totals					
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		52%			
(b) On State & Local Gov't Land					
(c) On Private Lands					
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept of Agriculture	1	16			16
	2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Lands - Farm Woodlands					
(e) On Private Land - Other					
(f) Total					

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement 8. General Administration State Ohio

	* Pr.	Subclasses of Improvement			Totals
		b. Branch Headquarters			
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. Of Agriculture	1	1			1
	2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other					
(f) Totals					
2. Ratio of Labor Cost to Total Cost (Estimated Percent)		(b)			
(a) On Federal Gov't Land		66%			66%
(b) On State & Local Gov't Land					
(c) On Private Lands					
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1	35			35
	2				
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Lands - Farm Woodlands					
(e) On Private Land - Other					
(f) Total					

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Const. Admin. Improvements State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Deptl Of Agriculture	1	9 bldgs.			
	2	3 bldgs.			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1	6 sets bldgs.			
	2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other					
(f) Totals					
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		50%			
(b) On State & Local Gov't Land		50%			
(c) On Private Lands					
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1	18			
	2	6			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2	18			
(d) On Private Lands - Farm Woodlands					
(e) On Private Land - Other					
(f) Total		42			

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#1 - Necessary work to continue during prosperity as well as depression.
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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Const. Development Roads State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1	53			
	2	14			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2	50			
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other					
(f) Totals		117			
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		50%			
(b) On State & Local Gov't Land		50%			
(c) On Private Lands					
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1	116			
	2	20			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2	100			
(d) On Private Lands - Farm Woodlands					
(e) On Private Land - Other					
(f) Total		236			

* Priority
#1 - Necessary work to continue during prosperity as well as depression.
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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Erosion Control State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1	535 Ac.			
	2	535 Ac.			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other					
(f) Totals		1070 Ac.			
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		80%			
(b) On State & Local Gov't Land					
(c) On Private Lands					
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept of Agriculture					
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local					
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other					
(f) Total					

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Recreation State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1	7 proj.			
	2	14 proj.			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1	12 proj.			
	2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other					
(f) Totals		33 proj.			
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		80%			
(b) On State & Local Gov't Land		60%			
(c) On Private Lands					
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1	11			
	2	25			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1	400			
	2				
(d) On Private Lands - Farm Woodlands					
(e) On Private Land - Other					
(f) Total		436			

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Wildlife Improvements State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (Acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1	2 proj.			
	2	61 proj.			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other					
(f) Totals					
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		80%			
(b) On State & Local Gov't Land					
(c) On Private Lands					
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1	1			
	2	458			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1				
	2				
(d) On Private Lands - Farm Woodlands					
(e) On Private Land - Other					
(f) Total					

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CAPITAL IMPROVEMENTS FOR FOREST LAND

Class of Improvement Timber Inventory State Ohio

	* Pr.	Subclasses of Improvement			Totals
1. Amounts (acres, miles, etc.)					
(a) On Gov't Land, Dept. of Agriculture	1	4 proj.			
	2	4 proj.			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1	50,000 A.			
	2				
(d) On Private Land - Farm Woodlands					
(e) On Private Land - Other					
(f) Totals					
2. Ratio of Labor Cost to Total Cost (Estimated Percent)					
(a) On Federal Gov't Land		85%			
(b) On State & Local Gov't Land		85%			
(c) On Private Lands					
(d) On All Land					
3. Employment (man years)					
(a) On Government Land - Dept. of Agriculture	1	20			
	2	20			
(b) On Government Land - Other Federal					
(c) On Public Land - State and Local	1	10			
	2				
(d) On Private Lands - Farm Woodlands					
(e) On Private Land - Other					
(f) Total		50			

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